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ADDRESSES AND ORIGINAL ARTICLES

SEBORRHŒA *

BY JOHN KINNEAR, M.D., M.R.C.P. Edin.

PHYSICIAN FOR DISEASES OF THE SKIN, DUNDEE ROYAL INFIRMARY; LECTURER IN DISEASES OF THE SKIN, ST. ANDREWS UNIVERSITY

THERE is considerable confusion among dermatologists as well as general practitioners in the use of the terms "eczema" and "dermatitis." This is well known; but it is not so generally recognised that even greater confusion exists as to what should be included under the heading of seborrhœa. The name has been used in what one can only describe as absurd conditions, and "seborrhœa" even of internal organs has been described. The object of this paper is to see if we can do anything to clarify this position, to get in our minds some sort of picture of what seborrhœa is, and what should be excluded from its domain. I believe that this can be done and without great difficulty.

Seborrhœa is the name given by many to a group of diseases showing either scaliness of the scalp, oozing dermatitis or eczema of the scalp, or characterised by increased oiliness of the scalp or of the skin in general. It is a heterogeneous collection of diseases differing widely in their ætiology, clinical characteristics, course and treatment. I wish to consider them very briefly and, by excluding those having no claim to the title of seborrhœa or seborrhœic, I hope to make the position less obscure.

CONDITIONS ASSOCIATED WITH PITYRIASIS

1. Scaliness of the scalp may be due to infection by a ringworm. Here we have something definite to go on; besides the scaliness there are broken hairs and the characteristic appearances which are typical of microsporon, trichophyton, or achorion infection. Remember that favus, if the scalp is kept clear of scutula, can present a scaly appearance which is deceptive. This form of scaliness is generally readily diagnosable, and if there is any doubt the microscope will settle the question.

2. Pityriasis of the scalp due to infection by non-hæmolytic streptococcus is often referred to as seborrhœa, and quite incorrectly. Here after the end of the acute dermatitis stage, which will be referred to later, a generalised fine pityriasis is left, at first on a red base, but later without any erythema. It is important to realise that this condition is generally a sequel to a weeping dermatitis, a fact which greatly helps in the diagnosis; traces of the dermatitis will often be found, especially as an intertrigo behind the ears.

3. Psoriasis may affect the scalp only, and diagnosis may then be difficult; if lesions can be found on the body as well it is greatly simplified. In the scalp the scaliness is found in sharply circumscribed patches, usually with heaped-up scales, so that the lesions can be felt as "lumps" more easily than they can be seen.

4. Dandruff is an exceedingly common complaint, and is often called seborrhœa, which is, I think, unfortunate. I prefer it under the name of pityriasis simplex or pityriasis capitis. It is due to infection by the pityrosporon of Malassez, and is characterised by the presence of very fine scales which, if abundant, may fall on the clothes, especially when the hair is brushed, and give a powdered effect to the shoulders. On examining the scalp we find that the scaliness is mostly round the hair follicles, and may be widespread or patchy, but its appearance is typical and usually easily distinguished from the other forms of scaliness. Pityriasis simplex may affect other parts of the body, the scales falling inside the clothing infecting the skin elsewhere, and it may undergo changes in appearance which will be referred to later. It frequently commences in early childhood and may continue in varying degree all through life.

It appears to me that each of these four conditions is equally entitled to be called seborrhœic.

CONDITIONS ASSOCIATED WITH SEROUS EXUDATION

A dermatitis or true eczema may affect the scalp and is frequently called seborrhœic. Typical of the latter is infantile eczema, sometimes called seborrhœic eczema when it starts on the scalp. This is a true eczema, fulfilling the criteria which have recently been laid down by Dr. H. G. Adamson [1]: redness and thickening of the skin with tiny intradermal vesicles and the formation of oozing "pits." Furthermore, though infantile eczema usually disappears during the second year of life, it may persist as a Besnier's prurigo, or be followed by urticaria, asthma, or hay-fever. Sensitisation to certain foods may be found, but their suppression does not always cure the condition. Infantile eczema has a very characteristic distribution. It affects the scalp and the face like a mask, so that the areas round the eyes, nose, and mouth are left clear. It may become generalised over the body, and may, of course, be secondarily infected.

Infantile eczema may start on the scalp, especially where it is covered by the dirty, scaly "milk cap" so often found where the mother is frightened to wash the scalp thoroughly. Irritation and infection are probably the exciting cause of the eczema here, though once it has started it partakes of all the usual appearances of this disease.

2. Dermatitis venenata affects the scalp, usually following the use of a hair dye containing paraphenylene-diamine. The history and acute inflammation with large vesicles or bullæ, superficial in character, are diagnostic. The dermatitis may extend to the body, appearing in patches here and there, or it may even become universal. General symptoms are the rule, and may be severe. Prostration and fever are seldom absent in extensive cases, along with other symptoms of toxæmia.

3. One of the chief stumbling-blocks to a true appreciation of seborrhœa is the condition I call streptococcal dermatitis,[2] which is commonly miscalled seborrhœic dermatitis, and the recognition of this disease as a definite entity, with a specific cause, a definite clinical picture and course, is a great step in clearing up the picture of seborrhœa.

Streptococcal dermatitis is a disease we all know. In its mildest form it affects the folds behind the ears only, giving rise to a red, weeping intertrigo, but it may extend and affect the whole of the scalp, causing an acutely inflamed condition with a profuse secretion of serum, becoming, as it regresses, more scaly with less weeping. It is not a true eczema, there are none of the tiny intradermal vesicles nor the "pits" of eczema. A characteristic feature is that it affects chiefly the folds, especially that behind

* A paper read to the Forfarshire Medical Association on Jan. 23rd, 1936, with additional notes on treatment.

the ear, but the conjunctival folds and those of the nose and mouth are very liable to be affected. If it spreads to the body it affects the folds there too most markedly, the axillæ, groins, umbilicus, and the skin under pendulous breasts may all be the site of a similar condition. It is commonest in children, even infants, but it is easily distinguished from infantile eczema by an entirely different distribution; it is worst in the folds, whereas infantile eczema keeps clear of the folds. Later in life it gradually becomes more rare, but it may be found at any age, and is not markedly commoner in the years following puberty. It is due to infection by a variety of non-hæmolytic streptococcus and is quite distinct from impetigo. Apart from these conditions, diseases affecting the scalp characterised by weeping are rare.

I am firmly convinced that none of these diseases I have mentioned so far merit the adjective seborrhœic, and that it is a grave error to use it in connexion with them.

CONDITIONS ASSOCIATED WITH EXCESSIVE OILINESS OF THE SKIN

At birth there is frequently found a greasy covering to the body which is known as vernix caseosa, a condition to which little attention has been paid, but which appears to consist of desquamated epithelial cells containing an unusual amount of fat. I do not think that this process of shedding these fat-filled cells continues after birth, for an infant's skin is smooth, soft, and does not have an oily or greasy feel. It appears to have nothing to do with excessive glandular secretion. On the scalp in infants somewhat older there may be found a collection of dirty, greasy scales, probably a relic of this vernix caseosa, plus dirt and normal epidermal exfoliation, kept in situ by the hair, and the needless fear of washing a child's scalp thoroughly. If this is removed there is usually little trouble in keeping the scalp clean; quite a different story from getting rid of dandruff.

This may be the seat of a secondary infection, even an eczema, but the condition should not properly be termed a seborrhœa, nor the secondary results seborrhœic. There is no continuance of the excessive production of oil or sebum; an infant's skin is never seborrhœic in the same sense that an adult's may be.

At puberty a tremendous change takes place in the whole glandular system of the body, endocrine and externally secreting, and in this the sebaceous system takes a part. The pilosebaceous follicle in many parts of the body takes on a different aspect, giving rise to the adult distribution and type of hair, while at the same time there is normally some increase in the sebaceous secretion which may increase to a true seborrhœa in the literal sense of the word.

The "soil" of the skin has thus a different "dressing" and it is not surprising that we find a corresponding dramatic change in the flora of the skin. After puberty infection of the scalp with the ordinary form of ringworm is almost unknown, and if infection has been present it dies out spontaneously at puberty. This is true of the seborrhœic and non-seborrhœic skins alike. The contents of the sebaceous follicles, especially of the face, chest, and back, may not be able to escape normally if true seborrhœa is present, and we find the presence of comedones, "blackheads" which can be expressed as a worm-like object composed of cheesy material containing enormous numbers of a tiny bacillus, the micro-bacillus of seborrhœa of Sabouraud or the acne bacillus. Staphylococci invade these comedones, and we get secondary pustulation giving rise to the typical appearance of acne vulgaris, a disease which, appearing about the age of 14–16, drags wearily on till the thirties and, if not treated, usually leaves disfiguring scars. But it is amenable to treatment and the earlier the treatment the better the result.

The association of an over-oily skin with follicular irritation is interesting. We see it frequently in Dundee; firstly in the bronchitic child, well rubbed with oil and wrapped in flannel, in whom a folliculitis occurs on the chest and back; and secondly, in workers who come in contact with oil—engineers and jute workers, especially spinners—in whom the condition is usually taken as a matter of course. In these cases the folliculitis usually disappears on removal of the cause.

The pityrosporon finds the seborrhœic skin an ideal soil for its growth and dandruff becomes more luxuriant after puberty when the scales change their character and become greasier. Infection of the glabrous skin leads now to the typical "flannel rash"—the greasy circinate eruption found over the sternum, between the shoulders, and elsewhere. McLeod and Dowling [3] have been successful in cultivating the pityrosporon from these lesions and obtaining positive results with inoculation of the cultures on a seborrhœic skin.

Rosacea (we never call it acne rosacea now; it has nothing to do with acne vulgaris) is an interesting disease. It is associated with a more or less permanent flushing of the skin, due sometimes to alcoholism, indigestion, the constant ingestion of too hot or spicy foods, or menstrual disorder, but very often with no discoverable cause. It is common about 28 years of age and again in the forties, and especially in women. I should like to draw attention to the almost invariable presence of dandruff associated with rosacea. This is mentioned in many of the older text-books but in very few to-day. I do not know the exact association of these two conditions. I have not had time to study them as I should like, but I am certain that you do not get a satisfactory cure of rosacea unless you attack the pityriasis of the scalp at the same time.

Another interesting organism which attacks the seborrhœic skin is the *Microsporon furfur*, causing pityriasis or tinea versicolor. It is never found before puberty, and the lesions resemble very markedly those due to the pityrosporon on a seborrhœic skin; the organisms are closely allied. Pityriasis versicolor occurs on the sternum and between the shoulders of those who do not change their underclothing or wash frequently. It likes a warm moist greasy skin where it is not likely to be disturbed, and appears to have more right to be called "seborrhœic" than the pityrosporon infection; but it never is.

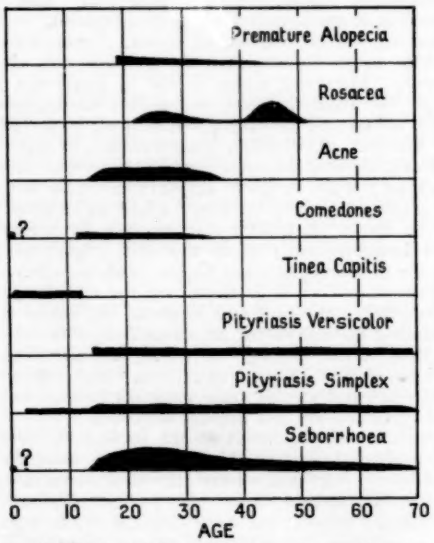
Sabouraud [4] has said that warts, molluscum contagiosum, senile warts, and epitheliomas are common on greasy skins.

I have endeavoured to evolve a diagram (see Figure) which will illustrate the relationship of these various conditions. It must be taken as a very rough attempt to show the frequency and severity at various ages.

I am convinced that we should limit the term "seborrhœa" to its true, literal sense: it is an abnormal increase in the activity of the sebaceous glands evidenced by abnormal greasiness of the skin and, especially on the face, visible enlargement of the openings of the follicles. There is normally at puberty a change in the character of and an increase in the sebaceous secretion, and the exact point at which

this increase becomes pathological is difficult or impossible to determine.

I have put a "?" at birth. I am not prepared to say dogmatically that seborrhœa does not occur at birth though I believe it does not. True seborrhœa commences at or about puberty and may persist throughout life though with gradually decreasing severity. It is chiefly in evidence at the most active



Age-distribution of the conditions under consideration.

period of human existence—that period during which effort is demanded and willingly supplied by every organ and part of the human body.

Pityriasis simplex—dandruff—may occur at any age, but after puberty the pityrosporon takes on a more luxuriant growth. I have no great objection to the term "seborrhœic dermatitis" applied to these lesions on the body, provided it is remembered that two factors are at work: the pityrosporon infection and the seborrhœic soil. It is like the difference between a plant growing wild and the same plant in a garden bed; after puberty its growth changes as a wild plant's will on cultivation. With pityriasis versicolor the difference is even more striking, for it is never found before puberty; it must have a seborrhœic skin to grow on. Ringworm of the scalp shows just as strikingly the difference in the soil occurring at puberty but in the opposite manner; it is killed when the soil changes even though seborrhœa is not present.

One is led by their behaviour to remember that these are all vegetable parasites, not bacteria. They show in many ways their close relationship with the larger fungi we find in fields and gardens.

Next we have two diseases, comedones and acne vulgaris, which can be truly described as "seborrhœic." They are results of true seborrhœa and cannot exist without it; they flourish during the acme period of seborrhœa. Again with comedones I have put a "?" in infancy. Are the comedones of infancy, a rare occurrence, related to the comedones of adolescence? Again I am not prepared to dogmatise, but I doubt it, for the seborrhœic skin is absent in infancy and it is stated that the acne bacillus is not found in their case.

Rosacea is a difficult question. Is it a seborrhœic disease at all? Its age-incidence is, I think, against this, as is its undoubted relationship with gastro-intestinal upset. Recently it has been shown,[5] however, that hypochlorhydria is not commoner in rosacea than in other diseases, and a large proportion of its victims have artificial dentures. It is undoubtedly very frequently associated with pityrosporon infection of the scalp which, as I have said, must be treated to achieve speedy success. There is a fruitful field for research here.

Lastly there remains the very interesting question of premature alopecia, frequently called seborrhœic alopecia. Here are some facts about it. It commences about the age of 18 and is often complete by 30, leaving only a thin arc of hair round the sides and back of the scalp; after 30 the progress is much slower. It is not always present on a seborrhœic scalp, nor is it necessarily present where there is profuse dandruff. It is never found in eunuchs. It is common to both sexes but takes a different form in women, in whom it is more uniformly generalised and never becomes complete. It is, I believe, another expression of the change in the pilosebaceous follicle but quite distinct from seborrhœa, though it frequently accompanies it. It is also evidence of endocrine imbalance and occurs definitely later than the onset of seborrhœa. I am quite satisfied that hard, tight hats, short hair or similar local physical causes have nothing to do with its production. It has not become commoner nor changed its character since women shingled their hair.

TREATMENT

This conception leads to a more rational outlook when treatment is under consideration, but unfortunately we are not able to affect the true seborrhœic state as we would wish. Regulation by opotherapy of the general glandular upheaval occurring at puberty is not yet possible, nor can we in this way diminish the excessive secretion by the skin which occurs subsequently. Obvious upset of other glands of the body, however, especially ovarian dysfunction and menstrual troubles, should naturally be corrected as they appear to affect some of the diseases we have mentioned. We have therefore to tackle seborrhœa less directly, and it is of great importance to produce as healthy a body in general as is possible. Exercise, especially in the open air, is important, and constipation must be avoided; efficient mastication is apt to be neglected and bolting the food may lead to imperfect digestion with consequent deleterious effect on the skin. Anæmia is not uncommon at this period, though nowadays usually slight, and the administration of iron has often a beneficial effect. With regard to diet I recommend an ordinary mixed diet, not neglecting green vegetables and fruit, with moderation in starchy food and fat, especially chocolates, cream cakes, and pastry. The transient glycosuria so often seen in young people following excessive intake of starchy food is an indication that too great an amount of sugar is in circulation, and this may undoubtedly aid the growth of many secondary infections.

With regard to the treatment of the skin itself, daily cleansing with soap and water is necessary. It is astonishing to the seborrhœic patient to see how much extra "dirt" can be removed with cotton-wool soaked in spirit or ether immediately after he has washed in the usual way. A non-irritating soap should be used, preferably non-medicated, and bath salts (or sodium carbonate) can be added to the water in moderation with impunity, whereas with a dry

skin bath salts should be indulged in with great care; a normal amount of grease in the skin is necessary to keep it healthy and should not be unduly removed. Friction with a towel after washing is beneficial—it is stimulating and helps to get rid of the sebum in the ducts; massage is not, I believe, necessary. Care has to be taken in applying any greasy substance to the skin. Cold cream is best avoided; if make-up is desired a vanishing cream is less objectionable and a light coat of powder does no harm. I do not like ointments in the treatment of the complications of seborrhœa; to add extra oil, animal, vegetable, or mineral, to an over-greasy skin is theoretically unsound, and in practice often injurious. For the scalp the following shampoo will be found of value.

Ol. cadini	2	℥j
Thymol.	1	℥ss
Sap. virid.	33	℥ij
Spir. meth. ind. ..	ad 100	℥vj

The directions are important. The shampoo should be rubbed well into the scalp without mixing with water or wetting the hair, left for five minutes, and then rinsed off. While rinsing it may be rubbed into a lather if desired, but this is not necessary. Incidentally I do not consider that permanent waving has any deleterious effect on the scalp.

So much for the management and treatment of seborrhœa. The other diseases can be dealt with more briefly.

Pityriasis simplex.—Avoidance of infection or reinfection is most important. Hair-brushes used by a person affected with dandruff are infectious and should be avoided by others and washed weekly to avoid reinfecting himself. The use of the shampoo mentioned above is of great value. The head should be shampooed twice weekly at first but the intervals can be lengthened as the scaliness disappears. Should scaliness reappear before the next shampoo is due the interval should be shortened. It should never be longer than a fortnight, and this shampoo can be used indefinitely. It is pleasant to use and incidently makes the hair bright and "lively," a point much appreciated by most patients. Dandruff is frequently taken by the public to indicate dryness of the skin and brilliantine or other oil is used to make up for the supposed deficiency. This should never be done as it encourages the growth of the pityrosporon.

When the body is affected by the greasy circinate "flannel rash" sulphur and salicylic acid are standard remedies, but I prefer the daily application of 1 per cent. iodine, preferably dissolved in carbon tetrachloride. This is also effective with the "corona seborrhœa" in the scalp.

Pityriasis versicolor can be treated in the same way very effectively.

Comedones and acne vulgaris can be considered together. The underlying seborrhœa must be treated, as also the pityriasis of the scalp which is usually present. Sulphur is the most important drug we have for the treatment of acne, and is best given as a lotion. My favourite prescription is:—

Sulph. precip. ..	1	
Zinci sulph. ..	1	
Pot. sulphurat. ..	1	āā ℥j
Aq. ad	32	ad ℥iv

Every night the face should be "steamed" for five minutes with towels wrung out of very hot water. Blackheads can then be squeezed out if they come out easily, otherwise the skin is damaged and infection and scarring increased. The whole affected area is swabbed with spirit and finally the lotion applied. It is not usually possible to apply the lotion during the day but it is advantageous to do so if the patient can remain secluded. X ray treatment by a competent operator accustomed to treating acne is of the greatest value, much superior to vaccine treatment, either staphylococcal or with the acne bacillus. Such a vaccine, however, is often useful as an adjuvant, especially if autogenous. Ultra-violet light, though helpful, is much inferior to X rays.

Treatment should be instituted early and persevered in if good results are to be obtained.

Rosacea.—Gastro-intestinal and utero-ovarian troubles must be attended to but are not always present. Anything which tends to flush the skin should be avoided; too hot foods, strong tea or coffee, spices and condiments should all be forbidden and efficient mastication encouraged. Locally the cade and thymol shampoo should be used as already indicated; this is most important. The sulphur lotion should be applied every night as in acne. It will be found that after four or five days there is great improvement; then the skin begins to peel and the face feels hot and tight. This reaction is to be encouraged as it is necessary for effective cure. It gradually passes off and in about six weeks or so, depending on individual skin reaction, this reaction has ceased, the scaling has gone, also the rosacea, leaving a skin which is no more than "high coloured." X rays are not of the same value as in acne and in my experience are not usually required.

Premature alopecia.—It would be idle to pretend that our treatment of this so common condition is satisfactory. At best we can only slow down the process to some extent. Seborrhœa and pityriasis should be treated if present and a stimulating lotion, e.g.,

Hydrarg. perchlor...	0·1	grs. iij
Chloral. hydrat. ..	2	℥j
Tinct. canthar. ..	6	℥iij
Spir. meth. ind. ..	ad 100	ad ℥vj

can be brushed into the scalp with a tooth-brush every night. The mercury should be omitted if the patient intends to have the hair permanently waved, otherwise discoloration may result.[6] Sabouraud's painful and odorous treatment with sulphur in carbon tetrachloride and carbon bisulphide has not in my hands proved worth its disadvantages.

Streptococcal dermatitis.—It must be remembered in treating this disease that we are dealing with an infected and inflamed skin and that overstrong antiseptic treatment will, as in impetigo, increase the disease instead of curing it. There is no known antiseptic which will sterilise the skin quickly without producing irritation, and if irritation is produced by any treatment the disease will spread. We must therefore choose a weak and non-irritating antiseptic, and the most suitable to use are the aniline dyes and iodine. I find iodine very effective and much less obnoxious to the patient than the dyes. It should never be used stronger than 1 per cent., and if dissolved in carbon tetrachloride is less staining and irritating than in spirit. It should be applied daily, gradually more liberally as the skin gets used to it. On the scalp the hair should be clipped short and kept short, and crusts removed as often as necessary by starch poultices. A calamine cream can be applied after the iodine to sooth the inflammation. The prescription I use is:—

Calaminiæ.		
Zinci ox.	āā 6	āā ℥iv
Glyc. phenolis ..	1	℥xl
Ol. oliv.		
Aq. calcis ..	āā 24	āā ℥ij

If the patient is sensitive to iodine, 1 per cent. gentian-

violet in spirit may be used, diluted at first with equal parts of water.

It is difficult to complete the cure by this method alone. When the serous discharge has ceased and the inflammation is disappearing, tar is indicated and crude coal tar is the best form to use; birch tar is definitely harmful in streptococcal infections. A modification of White's formula which I find useful is:—

Crude coal tar	4
Zinci ox.	4
Amyli	16
Lanolin.	4
Vaselin.	24

It should be used at first diluted with 2 or 3 parts of zinc paste and gradually increased to full strength. The hair must still be kept short while using this paste and the scalp should be shampooed with the formula already given, preferably changing the oil of cade to crude coal tar. Treatment must be kept up till all trace of the disease has gone and is best done by a nurse and not left to relatives.

A FINAL WORD

Attention to detail and perseverance are indispensable to success in the treatment of all these diseases. In hospital I have had the directions printed on slips which are handed to the patients so that one can be reasonably certain that one's instructions are understood and are likely to be carried out. Previous to this I used to find that treatment was not as effective as it ought to have been, through some simple instruction being forgotten or omitted. I strongly recommend that in private the instructions should be written down for the patient's guidance. The result will be well worth the trouble.

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THE ALLERGIC BASIS OF PRIMARY PURPURA IN CHILDREN

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It was Osler [1] who, in 1914, suggested that before long the anaphylactoid key would unlock the mystery of the primary purpuras. Anaphylaxis was at that time less well understood than it is to-day and the word "allergy" had yet to be coined. Certainly the key did not show those evidences of attempts to force locks which it was never destined to fit, which to-day threaten to impair its usefulness. The present investigation cannot be said to unlock the mystery; it seeks only to inquire into the claim of the primary purpuras to be known as "allergic purpura."

The ætiology of the so-called primary purpuras is admittedly obscure; and though many attempts to classify them on an ætiological basis have been made, the broad clinical classification still stands and is found useful. Clinically three groups are described:—

1. *Purpura simplex.*—Little is seen apart from petechiæ. The temperature does not rise above 100° F. There may be joint pains; the condition does not last more than a few weeks.

2. *Henoch's purpura.*[2]—Hæmorrhage into the bowel wall produces severe abdominal pain, often with vomiting, prostration, constipation, and bleeding from the intestine. A tumour caused by the bleeding and œdema may sometimes be felt in a portion of the bowel wall. Swellings of joints and purpuric spots often accompany the intestinal symptoms. The patient is prone to remissions and exacerbations of the disease. There may also be hæmorrhagic nephritis.

3. *Schönlein's purpura.*[3]—The joint pains are often accompanied by a sore-throat and the temperature may be as high as 103° F. Purpura occurs on the legs and about the affected joints, which are swollen. Other skin lesions occur such as urticaria, and patches of œdema. There may be albumin in the urine and oliguria. The prognosis is good, but there is a tendency to relapse.

To these is added the morbus maculosus of Werlhof [4] or *thrombocytopenic purpura* in which a decrease of the blood platelets is constant. This observation has given rise to the tendency to classify the primary purpuras, as Kidd [5] and Goldstein [6] suggest, into thrombocytopenic and non-thrombocytopenic. Tidy [7] resists this classification, concluding that the hæmorrhagic purpuras form a single group, only separated from urticaria by the degree of capillary defect and that the observed alterations of the number of platelets are a secondary manifestation of this defect.

This clinical classification makes no attempt to take into consideration the question of causation, and it was with this end in view that the division of the purpuras into primary and secondary purpura was suggested, both being further subdivided into thrombocytopenic and non-thrombocytopenic. It is to the non-thrombocytopenic primary purpura that the term "allergic" has been applied. Thus Whitby and Britton [8] write:—

> "Anaphylactoid purpura is the modern name given to the four following conditions which at one time were thought to be separate entities but which are now believed to be grades of the same allergic condition: (1) purpura simplex; (2) Henoch's purpura; (3) Schönlein's purpura; (4) allergic purpura."

It is the object of this paper to bring evidence to bear on this belief.

EVIDENCE FOR THE ALLERGIC HYPOTHESIS

Cases have been reported in which a food factor has been definitely established. Duke [9] reports a case exhibiting purpuric symptoms which was sensitive to rice, beef, milk, and eggs. The patient was free of symptoms as long as these foods were avoided. Rice was given and immediately the symptoms returned. They disappeared again when rice was no longer taken by the mouth. Bartheleme [10] reports a case of Henoch's purpura in a woman who was similarly sensitive to egg and wheat. Alexander and Eyerman [11] report in all 9 analogous cases at different times, in which a similar exciting factor was present. They were sensitive to milk, egg, potato, and wheat; bacon and egg; red plums; wheat; pork, onions, and strawberries. They drew attention to the similarity of the symptoms in Henoch's purpura and a hypersensitive patient after the injection of foods to which they are sensitive.

Though the pathogenesis of purpura is by no means clear, it is not denied that there may be a relation between purpura and allergy, as there is, for instance, between purpura and arsenobenzol. That this is

not necessarily, or even commonly, so emerges from this investigation. The invocation of allergy as an explanation of the phenomena observed can only be justified if, on investigation, the subjects of the disease are found to have the attributes of allergic individuals. These attributes are fairly well defined in spite of the loose use to which the word "allergy" has been put.

Though the factors giving rise to the state of exaggerated susceptibility known as allergy are to a large extent unknown, it seems to be generally agreed that this allergic state is always based primarily on the natural inherited make-up of the individual sufferer, modified in some measure by external factors. Thus allergy is distinguised from anaphylaxis, which depends upon previous contact of the subject with

ANALYSIS OF CASES

Case No. and sex	1 (M.)	2 (F.)	3 (F.)	4 (M.)	5 (M.)	6 (F.)
Age in hospital (yrs.)	5	5	14	4	7	2½
Age at "follow-up"	9	10	15	7	12	6
Diagnosis	Simplex.	Henoch.	Henoch.	Schönlein.	Schönlein.	Schönlein.
Infective onset	No.	Pharyngitis; septic teeth.	Ulceration of nasal septum.	Tonsillitis.	No.	Pharyngitis.
Length of symptoms	2 weeks.	1 month.	3 months.	3 weeks.	7 weeks.	15 months.
Asthma	No.	No.	No.	No.	No.	No.
Hay-fever	"	"	"	"	"	"
Eczema	"	"	"	"	"	"
Urticaria	"	"	Yes.	"	"	"
Migraine	"	Yes.	No.	"	"	"
Pruritus	"	No.	"	Yes.	"	"
Food upsets	"	"	"	Refuses fat.	Eggs.	Bilious attacks (Note 3).
Associated symptoms, &c.	Enuresis and rheumatism (Note 1).	"	"	No.	No.	No.
Recurrence of purpura	No.	"	"	"	"	Petechiæ (Note 4).
Family history	Asthma and pruritus (Note 2).	No.	Sister urticaria.	"	"	No.
Bleeding time at follow-up	1 min. 35 secs.	1 min. 55 secs.	1 min. 40 secs.	1 min. 40 secs.	1 min. 40 secs.	2 min. 10 secs.
Tourniquet test	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.

Case No. and sex	7 (F.)	8 (F.)	9 (F.)	10 (F.)	11 (F.)	12 (M.)
Age in hospital (yrs.)	3	11	11	8	8	14
Age at "follow-up"	6	14	12	12	14	23
Diagnosis	Henoch.	Schönlein.	Simplex.	Henoch.	Henoch.	Simplex.
Infective onset	No.	No.	No.	Cold?	Tonsilitis. Septic thumb.	Tuberculous?
Length of symptoms	3 months.	6 weeks.	3 weeks. Two epistaxes first year.	2 weeks.	3 months.	10 days.
Asthma	No.	No.	No.	No.	No.	No.
Hay-fever	"	"	"	"	"	"
Eczema	"	"	"	"	"	"
Urticaria	"	"	"	"	"	"
Migraine	"	"	"	"	"	"
Pruritus	"	"	"	"	"	"
Food upsets	"	"	"	"	"	"
Associated symptoms, &c.	Yes. (Note 5.)	Rheumatism.	"	"	"	"
Recurrence of purpura	No.	No.	Epistaxis (Note 6).	"	"	"
Family history	Sister bronchitic.	Brother bronchitic.	"	"	"	"
Bleeding time at follow-up	2 min. 35 secs.	1 min. 25 secs.	1 min. 15 secs.	2 min.	1 min. 50 secs.	1 min. 30 secs.
Tourniquet test	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.

NOTES

1. (Case 1.) Enuresis ceased at age of eight, since when the child has attended a school for physical defectives. Rheumatic arthritis at four, but no cardiac lesion.
2. (Case 1.) Sister asthmatic; mother has pruritus and comes of asthmatic stock.
3. (Case 6.) Bilious attacks not related to any food—except perhaps mushrooms.
4. (Case 6.) Occasional crops of petechiæ for a year after discharge, but none during the past two years.
5. (Case 7.) Difficulty at weaning in finding suitable food. Occasional attacks of malaise and puffy eyelids since discharge.
6. (Case 9.) Epistaxis twice in the year after discharge. No purpura.

the exciting substance. It follows from this that the adjective "allergic" can only be properly applied to the individuals who are found to exhibit this abnormal sensitivity; allergy is a constant property of the allergic subject but not of the allergen.

In inquiring into the existence of a possible allergic factor in such a disease as purpura, it has seemed reasonable to concentrate our attention on the inherited make-up of the individual patients.

THE PRESENT INVESTIGATION

The series of cases of purpura upon which this communication is based have all been in-patients in the children's department of St. Thomas's Hospital. The three types of purpura known as purpura simplex, Henoch's purpura, and Schönlein's purpura have been selected. The diagnosis in the case of Henoch's and Schönlein's purpura is not usually difficult although there is no definite borderline between the two conditions. It is for this reason that they are often referred to jointly as the Henoch-Schönlein complex. With regard to purpura simplex, it is said that cases do occur in which the platelet count is lowered; in none of the cases recorded here was the platelet count lower than 100,000.

The small number of cases here observed and followed does not warrant any positive generalisations being made from the facts elicited, but these facts are claimed to have a certain significance when opposed to current beliefs in the allergic ætiology. In investigating the claim of these cases to be regarded as allergic we have been guided by those criteria indicated by Bray [12] as characteristic of the allergic state. Attention was paid to the following points in the history.

(1) *Age of onset* of purpura; this always corresponded closely with the date of admission to hospital. (2) *Recurrences*, periodicity or seasonal incidence and their relation to such factors as place, diet, drugs, or nervous strain. (3) *Mode of onset:* immediately preceding infection, or prodomata such as cough, cold, polyuria, malaise, flatulence, indigestion, or itching. (4) *Family history* of asthma, hay-fever, eczema, purpura, nettle-rash, pruritus, food upsets, or migraine. To exclude mistakes it was also asked if the relatives suffered from renal disease, cardiac disease, or tuberculosis. (5) The *patient's past history:* whether he had suffered from asthma, hay-fever, &c.; whether there was any difficulty when he was weaned; whether he had had several attacks of pneumonia or suffered from bronchitis, enuresis, or gastro-intestinal symptoms; and whether there was puffiness, redness, swelling, or itching of eyelids, or excessive lacrymal secretion, a tendency to continual wet nose or cough, or headache.

In the examination focal sepsis was excluded on the history (e.g., appendicular and urinary tract diseases) and by examination of the nose, throat, teeth, sinuses, and ears. Evidence of pulmonary or cardiac lesions and renal or endocrine dysfunction was sought. The bleeding time was taken by pricking the lobe of the ear, blotting the blood at regular intervals of fifteen seconds, and noting the time taken before bleeding stops. A tourniquet test was also done. The venous flow of blood from one arm was occluded for about ten minutes with a rubber band, and the presence of petechiæ was then noted. The platelet count had been done in the ward while the patient was in hospital.

The results of the inquiry are summarised in the accompanying Table.

SUMMARY AND CONCLUSION

Of the 12 cases studied 6 give no history of any abnormality in themselves or their family which can be considered suggestive of an allergic diathesis. Of the remaining 6 patients No. 1 comes of an asthmatic family and has suffered from enuresis, and No. 3 suffers, as does his sister, from urticaria. No. 2 has attacks of migraine. Three others (Nos. 4, 5, and 6) give vague histories of digestive upsets associated with certain foods. In no case has there been a recurrence of the purpura since the original attack, and in only one (No. 6) did the original attack last longer than three months. In the cases with symptoms possibly attributable to allergy (e.g., migraine, enuresis, and pruritus) these were not associated with the attack of purpura.

We conclude that, though purpura may occur in an allergic person as a result of the ingestion of suitable allergen, it is nevertheless fallacious to label the primary purpuras as allergic, since the patients often show none of the attributes of allergy, and the course of the disease makes an allergic basis seem improbable. The absence of recurrences is noteworthy.

In 5 of the cases recorded there were signs of septic infection before the onset of purpura. The series is too small to warrant any positive conclusion from this observation.

We wish to thank Dr. R. C. Jewesbury, physician in charge of the children's department at St. Thomas's Hospital, for permission to publish the notes of these cases.

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THE RECOIL FOLLOWING FREE DRAINAGE IN ACUTE INTESTINAL OBSTRUCTION AND OTHER ANALOGOUS CONDITIONS

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Those who are experienced in the practice of general surgery are quite familiar with the principle of slow decompression in the treatment of ailments depending on direct pressure or back pressure on organs or systems.

The morbid physiology in such diverse conditions as urinary obstruction, portal and biliary obstructions, ascites, empyema, glaucoma, hydramnios, high blood pressure, and increased tension within the cranium and spinal canal, is from the point of view of treatment the same. Some years ago, at a joint meeting of the British and Canadian Medical Associations held at Winnipeg, the following rule was suggested: "When an organ or system is suffering directly from pressure effects or indirectly from back pressure, the greater the pressure the more gradual should be its relief."

In 1929 we commenced to apply this rule to the treatment of acute intestinal obstruction, and recent research in the laboratories appears to support the practice. Elman and others subsequently published some interesting communications on the same subject.

It is clear that when an organ is subjected to severe and sudden pressure the arterioles are constricted and that vasoconstriction follows in the capillaries. If the pressure is suddenly released the vascular recoil appears in many instances to exceed the original pressure in its destructive effects.

Following the diminution or cutting off of blood-supply in the first instance, the active cells of the organ are partially or completely devitalised and function becomes limited or suppressed. With sudden release of the pressure the organ becomes flooded with blood as the arterioles are set free, and vaso-dilatation follows constriction in the capillaries. The cells are unable to withstand the torrent and cease to function. On the other hand, it is an every-day observation that pressure or back pressure exerted slowly will permit of an accommodation to the new conditions and no vital changes will result. The recoil from the gradual relief of such pressure is also of a negative kind. It is also well known that if excessive pressure is gradually released, cells, such as renal cells, hepatic cells, and myocardial cells, undergo regeneration with a corresponding restoration of function. The problems under consideration are by no means confined to surgery. For example, treatment does not aim at a sudden drop in blood pressure in cases of idiopathic hypertension. If such a result could be obtained the effects would, in all probability, lead to cardiac and renal failure. Similarly when the blood pressure is high, anæsthetists avoid methods which may bring about a sudden fall. Oculists are concerned with glaucoma. The recoil following a rapid intra-ocular decompression manifests itself by vasodilatation, intra-ocular hæmorrhage, and retinal detachments. Obstetricians teach that in such conditions as hydramnios, if the formation of fluid is slow, there is a gradual adaptation of the organs and tissues. If it is rapid there are many manifestations of morbid change—the lips, hands, and feet become cyanosed, there is indigestion and vomiting, and albumin appears in the urine. A climax is reached if the membranes rupture. A drop in blood pressure, syncope, and cardiac failure may be the result. Special care is taken when inducing labour in cases of hydramnios to permit only a gradual release of the contained fluid.

Normal pregnancy is a good example of gradually increasing intra-abdominal pressure in which there is time for the organs concerned to adapt themselves to the new conditions. The pressure having reached a certain point is not progressive. Parturition is arranged by nature to take place in stages so that a sudden release of pressure is avoided. Nevertheless cases are recorded from time to time of sudden death following childbirth, in which no pathological lesion could be discovered before or after death. It would be interesting to note if in such cases the delivery of the child had been too precipitate. The recoil following decompression of the urinary tract, biliary tract, empyema, and of the central nervous system have been dealt with in the original communication.

ACUTE INTESTINAL OBSTRUCTION

The operative mortality for this condition, although there has been some improvement recently in published figures, remains at a height which is disheartening (approximately 40 per cent.). A simple operation performed under local anæsthesia may suffice to relieve the cause, and yet soon after operation the patient becomes acutely toxic, the temperature and pulse-rate may rise, there is restlessness and delirium, the blood pressure falls, and renal and cardiac failure supervene. Often such cases have been treated before, during, and after operation by every known modern method, including replacement of the lost fluids and chlorides, blood transfusions, and by lavage and drainage through the duodenal tube. In 1930 reference to these matters was made as follows:—

"Looking in retrospect over a number of years especially since the advantages of high jejunostomy have been realised, I feel sure that acute cases did best when a slow steady drain of intestinal contents could be established through a small tube."

"The worst cases were those in which drainage failed, but often equal post-operative anxiety was felt when the distended intestines were emptied as completely as possible at the time of operation by the use of a large tube."

"In like manner, rapid drainage through a Paul's tube following operation, although often regarded as an encouraging omen, may be followed by deplorable results. The sudden relief of the distended abdomen, and the collapse of the intestinal walls, together with the flooding of the vascular channels and the fall of the blood pressure, produced the clinical picture of general shock."

The guiding principle in the treatment of acute obstruction has been that the greater the distension and the longer the history, the more slowly should the intestinal contents be evacuated through a small enterostomy tube. Elman in 1934, after reference to the vascular changes which accompany intestinal obstruction, confirms the impression just mentioned. He says:—

"The intestinal distension for a time at least acts as a protection against absorption of toxins and bacteria. Now, whenever the intestinal pressure falls sufficiently whether from the release of the cause of the obstruction, drainage through an enterostomy tube, or spontaneous emptying due to regurgitation, the blood flow through the gut wall begins again, and there is nothing now to prevent intestinal contents from entering dilated capillaries. . . It is obvious that a high intra-intestinal pressure protects the body from their absorption even though it is the high pressure itself which started the trouble by interfering with the circulation and thus impairing the viability of the mucosal barrier." "The autointoxication theory," he says, "while it may be a perfectly valid one, has lacked proof because attention has been directed to the investigation of the nature of the toxin, rather than to the search for the mechanism by which it may reach the circulating blood and vital centres."

Finally Elman points out, and thus supports our previous conceptions, that—

"the gradual deflation of the distended bowel was recommended to allow a readjustment in circulation and absorption to take place slowly enough to avoid the deleterious effects which follow sudden changes. A number of patients in which this procedure has been carried out have all recovered."

The procedure which I have adopted during the last seven years in the treatment of acute intestinal obstruction is briefly as follows.

The abdomen is opened under spinal or local infiltration anæsthesia, after the administration of morphia, gastric lavage, and pre-operative medication, including the replenishment of the blood chlorides. The site of the obstruction is found and, if the cause is simple and uncomplicated, it is relieved by orthodox methods. A small loop of distended intestine above the site of obstruction is isolated and emptied by finger pressure and

secured with a light clamp. Either the Witzel method is adopted or a small tube or de Pezzer catheter corked with a spigot is introduced directly through a puncture in the intestinal wall. A purse-string suture is tightened round the tube. The clamp is removed and the tube pushed further into the gut if necessary. It is then anchored by a single stitch to the seromuscular coat.

A stab wound is quickly made in the abdominal wall with the aid of a thimble, in a position which will allow the tube to emerge without kinking. (The tube is usually passed through a portion of omentum in the manner recommended by Mayo. The loop of intestine is not anchored to the abdominal parietes.) The enterostomy tube is connected with a long tube provided with a screw clamp. This latter is released sufficiently to allow the intestinal contents to flow at the rate of a quick drop. In 24 hours it is further released until gradually the intestinal contents are allowed to escape unimpeded. Alternatively the spigot is left in place until the patient returns to bed, and the sister is instructed to remove it and permit a flow of from two to four ounces every hour. If there is strangulation in a late case, or if the removal of the obstruction is likely to be attended with difficulty, the obstructed portion of intestine is exteriorised and its rectification left to a subsequent date. (A three-bladed clamp given to me by Dr. Rankin of the Mayo Clinic about ten years ago is of great utility for quick aseptic resection and restoring continuity in these cases.)

Immediate resection of the affected gut has its advocates, but the success of this procedure depends upon ideal surroundings. If performed as a routine under emergency conditions the mortality must remain high. The following is an illustrative case :—

T. K., aged 67, was operated upon in 1935 on the fourth day following acute intestinal obstruction. Fæcal vomiting of the characteristic regurgitant type was well established. A Jutte tube was passed through the nose to the duodenum and aspirated every hour during preparation for operation. It was left in situ during and after operation. Five per cent. glucose in normal saline was given intravenously in large quantities to correspond in measure with the large amount of fluid lost by vomiting. It was noticed in this as in other cases that the more fluid administered, the more rapidly the stomach filled with obstructed intestinal contents.

The abdomen was opened through a muscle-dividing incision in the right iliac fossa. Free fluid was thoroughly removed by suction. The collapsed ileum was found and traced upwards to the site of obstruction, above which there was considerable intestinal distension. The obstruction was due to internal hernia, probably into the fossa ileocæcalis, but no time was lost in ascertaining the exact position. The obstructed portion was released without much difficulty. A distended loop 5 or 6 in. above the site of obstruction was lightly clamped: the seromuscular coats were divided for 2½ in. along the convex border. A very small opening was made in the mucous membrane at the proximal end of this incision and a rubber catheter inserted as far as the clamp would permit. A purse-string suture previously introduced was tightened round the catheter, and the clamp removed. The catheter was pushed for an inch or two further into the intestine and secured to the sero-muscular coat by a single stitch. The divided sero-muscular coats were sutured over the catheter in valve-like fashion. The wound was closed and the spigot removed for a moment to ascertain if drainage was free.

Three ounces of intestinal contents were allowed to flow from the tube every hour by withdrawing the spigot; the stomach was aspirated at the same time through the Jutte tube. After 24 hours the spigot was removed and free drainage was permitted into a vessel by the bedside. Recovery was uninterrupted.

Apart from the assumption that free drainage through a large tube with the consequent sudden release of pressure is dangerous on physiological grounds, there is an additional reason for evacuating the intestinal contents as slowly as possible. For the first few minutes uncontrolled drainage may be profuse, but within a short time all drainage may stop. In such a case it is probable that one or two loops of intestines have been emptied. The walls of the flaccid and empty gut collapse and become approximated, thus impeding the flow of retained material from the distended coils above. On the other hand, if a mere trickle is allowed to escape from a coil by means of a tube controlled with a screw clamp, intestinal contents pass down from above by a process of siphonage until drainage is complete. Usually in a few days peristaltic powers are restored.

In early cases when the obstruction can be relieved easily and the contents subsequently evacuated little by little per vias naturales, the results are uniformly good, but in recent years it is only in the *very* earliest cases that the enterostomy tube is omitted. Moynihan once referred to the drainage-tube in certain operations on the biliary tract as the hypnotic tube. The small enterostomy tube is of the same nature, both the surgeon and the patient sleep better when it is securely in position. The removal of free fluid by suction is important. This fluid is toxic and its presence contributes to the dangers already mentioned.

ADDENDUM

Since writing this communication I have had the privilege of reading Mr. Ian Aird's original article on the morbid physiology of Intestinal Obstruction, based on laboratory research under the direction of Sir David Wilkie (Edin. Med. Jour., 1936, xliii., 375). His conclusions are of considerable practical importance. Inter alia he states "A drop of silver nitrate solution is added to the acidulated urine in a test-tube. The appearance of a white precipitate indicates the presence of chloride in the urine. If chlorides are present in the urine, the blood chloride is sufficiently high for operation to be safely performed." He reminds us that "the greater part of the 40 per cent. mortality in intestinal obstruction is a post-operative mortality, and dramatic death following sudden release of an intestinal distension is not an uncommon surgical tragedy." Finally he confirms our impressions published six years ago "Hesitation should be felt in draining suddenly a grossly distended bowel, the experiments described offer strong support to recent suggestions for slow decompression." "In this way," he says, "the general circulation would not be suddenly flooded by depressor blood from the recovering bowel." Mr. Aird's communication throws a flood of light on many heretofore puzzling phenomena.

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MERSEYSIDE HOSPITALS' COUNCIL.—The year 1935 was a record one for the council, for its total income was £167,049, an increase of £5670 over 1934. The penny-in-the-pound fund has made satisfactory progress and the total of contributors at the end of last year was 309,267, the contributions amounting to £125,961. Employers gave £26,675. The average contribution is under 2*d*. A small handbook entitled A Guide to the Penny-in-the-pound Fund has been issued by the council, which gives full particulars about its methods of working.

THE SUBSCURVY STATE IN RELATION TO GASTRIC AND DUODENAL ULCER*

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THE cause of death of 51 patients after operation on the stomach at St. Bartholomew's Hospital during the last sixteen years has been analysed by Mr. Reginald Payne.[1] He found that general peritonitis was the cause of death in 16 cases, and in 12 of these "the peritoneal infection appeared to have arisen as a bacterial leakage at the site of anastomosis following on an almost complete absence of any fibrinous response along the suture line." Mr. Payne has demonstrated this to one of us, and the stitches stood out as though the operation had just been completed and there was no sign of fibrin or healing. Mr. Payne was inclined to think that the failure of healing might be due to severe anæmia, but the evidence was not conclusive. We had just completed some experiments on the excretion of ascorbic acid[2] and it occurred to us that the patients, owing to the long period of ill-health and the strict dieting which they had endured, might be in the subscurvy state. We also knew that the wounds of patients with actual scurvy healed badly, and it seemed possible that in some cases the amount of ascorbic acid in the body might be so small that the wounds would heal with difficulty. We therefore decided to estimate the degree of saturation of some patients with gastric and duodenal ulcers. Harris and Ray's modification of Tillman's dichlorophenol indophenol method[3] was used for the estimation of the ascorbic acid, the same precautions being taken as before.[2] It was necessary to make the time taken over each experiment as short as possible, and the following procedure was adopted. The excretion of ascorbic acid was estimated on a Tuesday; on the Wednesday and Thursday the patient was given 1000 mg. of ascorbic acid by mouth in three doses in addition to the usual diet. On the Friday a test dose of 400 mg. was given. On the Saturday and Sunday 1000 mg. was given each day, but the urine was not estimated as it would have entailed working on the Saturday afternoon and all Sunday. On the Monday a second test dose of 400 mg. was given, and the estimation made as usual.

Two healthy men working in the hospital carried out experiments for us, but the dosage was a little different to that used for the patients.

CONTROL 1.—A. B. excreted 31 mg. of ascorbic acid while eating his ordinary diet, and when he was given 1000 mg. of ascorbic acid the excretion rose to 203 mg. on the first day, and to 772 mg. on the second day: 77·5 per cent. of the dose was excreted on the third day. He had, however, a definite deficit of ascorbic acid as he only excreted 913 mg. out of the first 2000 mg.

CONTROL 2.—B. C. very rarely ate any raw fruit but he apparently excreted 34 mg. of ascorbic acid on his ordinary diet. No rise in excretion occurred on the first day, but 150 mg. was excreted on the second day and the additional ascorbic acid excreted out of 2000 mg. was only 115 mg. The excretion rose on the third day to 266 mg., or 66 per cent. of the test dose of 400 mg.; it rose to 605 mg. and 673 mg. on the fourth and fifth days, and to 955 mg., or 95 per cent., of the test dose of 1000 mg. on the sixth day when his intake had been 4400 mg. B. C. was therefore much more unsaturated than A. B.

These figures are much worse than those of the healthy adult whom we previously took as a control for the observations on a man with mild scurvy.[2] This man ate plenty of fruit and excreted 1080 mg. out of an intake of 1200 mg. in three days, and was therefore very nearly saturated with ascorbic acid.

Nine male patients with either gastric or duodenal ulcer have been examined and the results are shown in the Table. The usual diet, which is a modification of the Lenhartz diet, was given. This consisted of unboiled milk, dried milk food, eggs, biscuits, and butter (pounded fish in some cases). It contains a sufficiency of vitamins A, B, and D, but the content of vitamin C is small even when unboiled milk is used, while it is negligible if the milk is boiled or pasteurised. In eight of the nine cases 2 oz. of orange juice was added to the diet so that the intake of vitamin C was about 40 mg.

CASE 1.—This man had been in hospital five weeks before the test was carried out. The excretion on the two preliminary days varied from 13·9 to 9·2 mg. An immediate increase to 130 mg. on the first day occurred, but unfortunately the urine of the second day was lost. On the third day 466 mg. was excreted, or 66 mg. more than the test dose. This is certainly due to the excretion of some of the 1000 mg. of the ascorbic acid taken on the previous day.

CASE 2.—This man had been in hospital eight weeks when the test was carried out: 10·4 mg. of ascorbic acid was excreted on the preliminary day, but the urine on the first day was unfortunately not collected, and he excreted 521 mg. on the second day and 737 mg. out of 1000 mg. on the third day.

CASE 3.—This man had only had symptoms for two weeks, and the estimation was done as soon as possible after admission: 25·9 mg. of ascorbic acid was excreted on the preliminary day. A slight rise occurred on the first day; a good excretion of 280 mg. on the second day, and 82 per cent. of the test dose of 400 mg. was excreted on the third day, and 90·7 per cent. of the test dose on the sixth day.

All these cases are less unsaturated than the control B. C. The next five cases all show a grave degree of unsaturation, as in only one case was any increase noted on the second day, and the percentage of the test dose of 400 mg. on the third day varied between 44 and 28·5 per cent. The result of the test dose on the sixth day was satisfactory in every case as the lowest percentage output was 77·7 per cent. The figures in Case 9 are very remarkable as no increase occurred after 2400 mg., but the response on the sixth day to the 400 mg. dose was satisfactory as 77·7 per cent. was excreted.

All the results are better than those of our patient with mild scurvy[2] who excreted only 52 per cent. of the intake even after 4920 mg. had been given.

The variation in the figures for the output while the ordinary diet was eaten calls for some comment. The excretion varied from 8·5 to 25·9 mg. and gave no indication of the degree of unsaturation. The results in Case 9 are specially striking, as 17·1 mg. were apparently excreted on the first day, but only 13·7 mg. on the fourth day, in spite of the administration of 2400 mg. We find it difficult to believe that 17·1 mg. of ascorbic acid were excreted by a patient who was in such an unsaturated condition, and think that this figure is too high. We are inclined to the view that the method of estimation is disturbed by the presence of small quantities of other reducing substances in the urine, but we have no evidence as

* A communication to a meeting of the Paget Club at St. Bartholomew's Hospital which will be published in the 1936 volume of the St. Bartholomew's Hospital Reports.

Results of Examination of Nine Male Cases with Gastric or Duodenal Ulcer

Case.	Disease.	Onset of symptoms.	Time of test after admission to hospital.	Intake of ascorbic acid in milligrammes.						
				Days Prelim. 36	1 1000	2 1000	3 400	4 1000	5 1000	6 400
				Milligrammes of ascorbic acid excreted in urine.						
			Days.							
1	Gastric ulcer.	5 years.	35	13·9 to 9·2	130	N.E.	466	N.E.	N.E.	751 = 75 %*
2	Gastric ulcer.	..	42	10·4	N.E.	521	737 = 73·7 %†	,,	,,	..
3	Gastric ulcer. Gastrectomy.	2 weeks.	5	26·0	34·5	281	328 = 82 %	,,	,,	363 = 90 %
4	Gastric ulcer.	21 years.	4	8·8	10	30·4	156 = 44 %	,,	,,	314 = 78·5 %
5	Hæmatemesis. Gastric ulcer.	5 years.	35	8·5	N.E.	N.E.	148 = 37 %	,,	,,	..
6	Duodenal ulcer.	6 years.	6	23·2	28·8	27	133 = 33·2 %	,,	,,	504
7	Gastric ulcer.	5 months.	7	10·2	12·5	109	119 = 29·7 %	,,	,,	363 = 90 %
8	Gastric ulcer. ? Neoplasm.	3 years.	28	11·7	N.E.	N.E.	114 = 28·5 %	,,	,,	..
9	Duodenal ulcer.	9 weeks.	10	17·1	28·7	19·5	13·7 = 3·4 %	,,	,,	311 = 77·7 %

N.E. = not estimated.

* This patient was given 1000 instead of 400 milligrammes on the sixth day. † This patient was given 1000 instead of 400 milligrammes on the third day.

to their nature. When little ascorbic acid is present in the diet the error caused by these reducing substances may be serious.

DISCUSSION

The evidence which we have brought forward suggests that many patients who have a gastric or duodenal ulcer and have been treated with a strict diet lack ascorbic acid in their body. It is well known that the wounds of patients with scurvy heal badly and Hess [4] says that "they assume a hæmorrhagic aspect, the edges becoming bluish or livid and showing no tendency to heal; even scars which have existed for many years change in colour and show an altered state of nutrition, and ulcers long healed break out afresh."

The occurrence of gastric and duodenal ulcers in guinea-pigs and rats kept in the subscurvy state have been studied by three groups of workers.

McCarrison [5] in 1921 fed nine guinea-pigs on a diet of crushed oats and autoclaved milk, and they were in the "pre-scorbutic" state when they were killed. The duodenum in every case was congested and a hæmorrhagic infiltration of all coats of the bowels was present; the mucous membrane showed ecchymoses and occasional punched out areas extending to the peritoneal coat. Three of the animals also had punched out necrotic areas in the stomach. Harris [6] was so impressed with this work that he added fresh fruit to the diet of his patients with gastric ulcers, apparently with good results. In 1929 McCarrison [7] published an important paper on the diseases which occurred when albino rats were kept under healthy conditions, but given diets which were deficient in vitamins. Among other diseases he studied the incidence of gastric ulcer in two experiments. One set of rats was fed on diets similar to those of the poorer natives of Madras, and 11·1 per cent. of the rats developed gastric ulcers. In another experiment a diet similar to that of the poorer natives of Travancore was given and 22 per cent. of the rats developed gastric ulcers. Both these diets are very deficient not only in the vitamins A, B, and C, but also in other respects.

In 1929 Magee, Anderson, and McCallum [8] kept guinea-pigs on diets deficient in "all the vitamins as well as several inorganic constituents," and found that 22 per cent. of these animals developed ulcers in the pyloric region.

In 1933 Smith and McConkey [9] found that guinea-pigs kept in the subscurvy state were liable to develop duodenal ulcers. When a sufficiency of vitamins A and D was given to correct any deficiency in the diet the ulcers still occurred. In one very interesting experiment fifteen guinea-pigs were divided into three groups: those in Group I. were given a good diet; those in Groups II. and III. a diet of rolled oats and autoclaved milk, with the addition of 0·3 c.cm. of cod-liver oil to correct the deficiency of A and D. At the end of 15 days there was no gross evidence of scurvy, but it was thought that the signs would appear in the next 10 days. All the animals were then operated on under aseptic conditions. The abdominal cavity was opened; a hole bored into the stomach with a cautery, and the wall of the duodenum scarified with a dental burr. The hole in the stomach was sealed with a purse-string suture and the abdomen closed. The animals in Group I. were killed at the end of 18 days; the wounds were healed and the stomach and duodenum appeared normal. The animals in Groups II. and III. did not show any gross signs of scurvy at the time of operation, but the incisions bled more easily and the tissues were slightly œdematous. The animals in Group II. were given 10 c.cm. of canned tomato juice each day, and killed after 21 days. The wounds had healed completely and showed no abnormality except a little œdema of the subcutaneous tissues. The stomach and duodenum were normal. The animals in Group III. died in one to two weeks after the operation; the skin incision showed no sign of healing; in two animals an ulcer had developed at the site of puncture into the stomach and four out of five had developed ulcers of the duodenum.

These experiments on rats and guinea-pigs show that ulcers of the stomach and duodenum are liable to develop when the animals are in the subscurvy state.

Harris, Abbasy, Yudkin, and Kelly [10] have published observations on the excretion of ascorbic acid by 74 hospital patients in Cambridge. They found that 84 per cent. of these patients excreted less than 13 mg., which they regard as the minimum standard excretion. Nineteen patients had gastric or duodenal ulcers, and the average excretion in these was 8·7 mg. Kelly,[10] who examined hospital patients in Manchester immediately after admission, observed eight patients with gastric and duodenal ulcers. They at first excreted more than 13 mg., but after four days of the hospital diet excreted only 9 mg. Harris, Abbasy, Yudkin, and Kelly [10] therefore advocate the addition of a maintenance dose of ascorbic acid to the diet of these patients.

It is impossible from our observations to say that the subscurvy state was responsible for the develop-

ment of the gastric ulcers in our patients. It is difficult also to say whether the ulcers healed more quickly than usual after the patients had been saturated with ascorbic acid, and it is too early to say whether the ulcers have soundly healed. The condition of the gastrectomy wounds reported by Payne tallies with the observations of those who have treated patients with scurvy, and with the results of Smith and McConkey's experiments on rats.

The evidence that six out of nine patients with gastric and duodenal ulcers are in the subscurvy state, coupled with the knowledge that the diet of milk, eggs, bread, and butter contains very little ascorbic acid, is sufficiently strong for us to advocate the use of adequate amounts of ascorbic acid in the treatment of these conditions. Two ounces of orange juice will supply about 36 mg. and thus prevent the "subscurvy" state from developing any further. We would prefer to give a dose of 1000 mg. on three successive days as this would ensure that the body is saturated with ascorbic acid, and then continue to give a daily dose of 36 mg. If the patient has an obstruction of the pylorus, which is causing vomiting, the ascorbic acid should be given intravenously.

We have to thank Prof. L. J. Witts and Dr. Geoffrey Evans for permission to examine their cases, and Miss Cambell, the sister of our ward, for her care in supervising the diet and the collection of the urine. We are very grateful to Dr. A. Hinds Howell and Mr. G. Discombe for making observations on their own intake and output of ascorbic acid.

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SCURVY AS THE RESULT OF DIETETIC TREATMENT

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THE four cases of adult scurvy seen during the last six years here described were all private cases, the first being a neurotic woman with flatulent indigestion who had "dieted" herself, the other three cases of peptic ulcer having dietetic treatment. The first two were seen before methods of estimation of ascorbic acid had been described, and in the others the ascorbic acid excretion was not worked out owing to the urgent necessity for treatment and the absence of hospital facilities. The records of the cases are therefore not as complete as one would wish, but as all showed typical manifestations of developed scurvy there was no reasonable doubt of the diagnosis. Further confirmation was afforded by the dietary history and (in three cases) the response to treatment.

CASE 1.—An unmarried woman, aged about 40 years, had suffered from constipation, abdominal pain, and flatulence for many years. At the age of 28 she had had an abdominal operation performed but no organic disease was found. The appendix had been removed. I was asked to see her on July 21st, 1931, as a case of acute nephritis. For some weeks she had had weakness and general aches, followed by slight swelling of the legs and the lower abdomen. A few days ago hæmaturia had been noted and the swelling had affected her hands and arms. On examination I found slight œdema of the hands and of the abdominal wall but none now of the legs. There was a petechial rash on the legs and thighs, most of the spots being in the hair follicles. There were one or two petechiæ on the palate. She had no teeth and would not wear artificial ones. The gums appeared healthy. The urine gave weakly positive reactions for blood and albumin. Deposit: red cells; no casts. Cultures sterile. On inquiry I found that she had not eaten fruit or fresh vegetables for three years as they gave her flatulence. She would not take orange juice even when the importance of it was explained. She did, however, consent to taking tomato-juice strained through gauze, and she made a good recovery in a few weeks.

CASE 2.—A man of 49 was sent to me on June 8th, 1932, as a case of "weakness, muscular pains, and a peculiar rash on the legs" with no diagnosis. He had œdema of both legs below the knees and a hæmorrhagic rash on the legs and thighs. There was a bruise on the inner side of the left knee. The upper teeth were artificial, the lower gums were swollen but not bleeding. Six years before he had had an operation for perforated gastric ulcer, and since then his diet had consisted of eggs, bread and butter, fish, mutton, and potatoes, but no other vegetables or fruit. He was given tomato-juice, scrapings of raw potato, and orange juice, and recovered in a few weeks.

CASE 3.—A man of 68, seen on Feb. 7th, 1936, was thought to be a case of purpura. For several weeks he had complained of shortness of breath. He had recently had severe epistaxis, and during the last two days, hæmoptysis. There were numerous and generalised petechial hæmorrhages and bruises under the skin. The gums were spongy and bleeding. There were no signs in the lungs. Anæmia and weakness were profound and he had dyspnœa on any movement. The spleen was not palpable. There was slight œdema of the legs but no albuminuria or hæmaturia. A blood film showed no sign of leukæmia.

He had had "stomach trouble" for years and had been "careful about his diet." A year previously I had seen him at the Montagu Hospital, Mexborough, where an X ray had shown pyloric ulcer, and he had been given a diet consisting chiefly of milk and fish. He was now given orange juice and injections of Redoxon. His hæmorrhage ceased but he died within 36 hours apparently of heart failure.

CASE 4.—A man of 70 developed hæmaturia. A surgeon was asked to see him on the assumption that he might have an enlarged prostate. His general condition was very poor, he complained of weakness and shortness of breath, and there was a rash on his legs. The surgeon reported that the prostate did not seem sufficiently abnormal to account for the hæmaturia. The next day, June 30th, 1936, when I first saw him he had developed hæmoptysis and his dyspnœa was extreme. The heart and liver were much enlarged, blood pressure 170/100. There was slight œdema of the legs and a hæmorrhagic rash on the legs and thighs. He had only three teeth, the gums around which were not particularly swollen and not bleeding. He had been given a diet for gastric ulcer five or six years previously, to which he had rigidly adhered. During that time he had had no fresh fruit or vegetables, and he had boiled all the milk. At about the same time myocardial disease had also been diagnosed. On July 2nd he was given two ampoules (4 c.cm.) of redoxon intravenously followed by 2 c.cm. subcutaneously each day for the next four days. Since then he has been having redoxon tablets by mouth. He had Cheyne-Stokes respiration for the following week and is still in a condition of myocardial failure. The rash on the legs has cleared entirely, however, the hæmoptysis stopped after the first injection, and the hæmaturia cleared up in four days.

The object of this paper is to point out the dangers of prolonged treatment with diets lacking in vitamin C, and also to call attention to the possibility of scurvy

developing on such diets. The correct diagnosis had not been made in any of these cases by the doctor in attendance simply because it had not been considered, scurvy being nowadays such a rare condition. Moreover scurvy may present itself in a variety of ways as these case-histories demonstrate. It is for this reason that the tentative diagnoses are recorded. Dr. George Graham has recently called attention to the state of vitamin-C deficiency which exists in many cases of peptic ulcer undergoing treatment, but I am not aware that cases of developed scurvy have so far been recorded.

ASTHMA

IMMUNOLOGICAL MECHANISM, DIAGNOSIS, AND TREATMENT

WITH SPECIAL REFERENCE TO VACCINE THERAPY

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IT is generally accepted that the asthma syndrome is an expression of a state of abnormal sensitivity or increased reaction (allergy) of the body to certain foreign substances, most of which are quite harmless to normal individuals. To take an extreme case: reclining in an arm-chair padded with horsehair causes an attack of asthma in a "horse-sensitive" asthmatic; pricking the patient's skin with a needle which has been dipped in an extract of horsehair produces a violent local reaction; the injection of minute amounts of the extract causes severe asthma; the intravenous injection of a few *minims* of horse serum in such a case has been known to kill.

The evolution of the asthmatic state can be divided into three parts.

1. *Predisposition* of the individual to become hypersensitive. This is commonly inherited but may be acquired. The exact nature of this immunological or biochemical kink is unknown.

2. *Development of hypersensitivity* to one or more of a wide variety of foreign substances. Contact with the offending substances then results in the violent reactions characteristic of the hypersensitive state. Though hypersensitiveness is developed commonly to substances with which the person came into close and repeated contact before the commencement of the asthma, this is by no means a constant feature and the capriciousness of the selection of sensitising substances is well known. When the hypersensitive state is first developed the specificity of the reactions is usually very definite, the horse-sensitive asthmatic reacting to the hair and dandruff of horses but not to that of dogs or cattle. More commonly the sensitivity is multiple but specificity is still a prominent feature. After a time the asthmatic tends to have his attacks precipitated by one or more of a wide variety of non-specific factors unrelated to the primary exciting cause.

3. *Secondary non-specific factors.*—These include nearly all possible forms of minor trauma—toxic and psychic, direct and reflex, dietetic indiscretions, &c. It has been suggested that these act by lowering the "tolerance" of the asthmatic to the primary specific exciting causes, so enabling the latter to provoke an attack in even more minute amounts than usually required

IMMUNOLOGICAL MECHANISM

(*a*) *Hypersensitivity to non-bacterial products.*—These include inhalants (animal dandruffs, pollens, face powder, house dust, feathers) acting directly on the lungs, and ingested and injected substances (foods, drugs, sera) which reach the lung tissue via the blood stream. The active principles in these substances are variously designated *idiotoxins* (Freeman), *allergens*, and *atopens*. When the specific idiotoxins are brought into contact with the tissues of the asthmatic the characteristic reactions of the hypersensitive state are produced; the pathological basis of these reactions is spasm of smooth muscle and increased permeability of blood capillaries; thus urticaria is produced in the skin (this is utilised in the well-known diagnostic skin tests), asthma in the lungs, paroxysmal rhinorrhœa in the nose, &c. The injection of hypersensitive serum into the skin of a normal individual renders the latter hypersensitive locally so that subsequent contact with the specific idiotoxin results in the formation of an urticarial weal. When such a passively sensitised area of skin is acted upon by the specific idiotoxin, in sufficient quantity to elicit the maximum reaction, the site becomes desensitised—i.e., does not react to further treatment with idiotoxin (Harley[1]). Passive transfer of sensitivity is due to the presence in the sensitising serum of special antibodies, the *atopic reagins*, *allergins*, or, more fittingly, *idioceptors*. When idioceptor is attached to the tissue cells the latter are rendered hypersensitive. The desensitisation of patients by repeated injections of suitable doses of specific idiotoxin is the result of inactivation of idioceptor as shown by the abolition of the skin sensitivity (Harley[2,3]).

(*b*) *Hypersensitivity to bacteria and their products.*—One is impressed by the large number of asthmatics presenting themselves for investigation and treatment in whom the asthma first appeared after or is associated with some infective process, often comparatively mild infections of the respiratory tract. Many of these cases give negative or only very feeble skin reactions to inhalant and ingestant idiotoxins but bacteriological examination almost always reveals marked qualitative or quantitative abnormalities. The excellent results of vaccine therapy in these cases support the hypothesis that the relationship between the bacteria and the asthma is one of cause and effect. Such hypersensitivity to bacteria however is of a different character to the hypersensitivity to non-bacterial substances discussed above. In the latter skin reactions are of the immediate type, consisting of an urticarial weal with erythema, fully developed in 15 minutes or less, and passive transfer of sensitivity by injection of serum can be regularly accomplished. Though immediate skin reactions to bacterial vaccines have been occasionally reported, the common type is a delayed reaction, essentially inflammatory in nature, which takes 24 hours or more to develop, and passive transfer by the injection of serum is not obtained.

Bacterial vaccine skin tests in the diagnosis and treatment of bacterial-sensitisation-asthma have been widely used in recent years, especially by clinicians in America. The usual method is to prepare vaccines of the bacteria of the sputum, &c., and test the patient's skin reactions to them (Thomas,[4] Touart,[5] Thomas and Touart,[6] &c.). Those which produce reactions are employed for therapeutic purposes. Unfortunately these vaccine skin tests have proved unsatisfactory as it has been found that non-asthmatic individuals often give similar reactions to the

vaccines, and also that vaccines of the normal intestinal Gram-negative bacilli often cause bigger reactions in the skin of the asthmatic than do the infecting organisms from the sputum (Rackemann and Graham,[7] Benson,[8] &c.). Experimental investigations (Harley[9]) indicate that the delayed skin reaction is due to an increased sensitivity of the skin cells to the somatic nucleoprotein of the intact bacteria. This type of hypersensitiveness, or allergy as it is commonly called, is produced regularly in man and animals by natural and experimental infections; for example, the convalescent pneumonia patient gives the delayed skin reaction to pneumococcal nucleoprotein (Tillett and Francis[10]), and it is well known that the majority of normal individuals react in the same way to *B. coli* vaccine. The presence of such bacterial allergy in asthmatics therefore is not in itself conclusive evidence that the particular organism producing the biggest reaction is the one responsible for the asthma. At present we have to rely on the clinical history, the absence of skin reactions to non-bacterial idiotoxins, and the bacteriological examination, to guide us in the diagnosis and vaccine treatment of "bacterial-sensitisation-asthma."

TYPES OF ASTHMA

Clinically, the two main types of asthma discussed above may occur separately or together, with varying predominance of one or other. The following classification is not claimed to be a complete one, but it serves as a guide to the treatment of asthma from the immunological standpoint.

1. Hypersensitivity to non-bacterial substances.
2. Ditto, plus secondary infections or toxæmias.
3. Bacterial asthma.
4. Ditto, plus secondary non-bacterial sensitisations.

Type 1.—The sensitivities may be single or multiple. Single sensitisations are rather uncommon and the diagnosis is usually readily established from the history and skin tests. Multiple sensitivity is the general rule, though one sensitisation may predominate clinically. As this type becomes chronic the sensitivities tend to become more multiple and less distinct, and the constant trauma to the mucous membrane of the respiratory tract encourages the entry of infections to complicate the picture (*Type 2*). Alternatively, an infection may convert a subclinical sensitisation into an actual one, by lowering the tolerance of the mucous membrane to the specific idiotoxins. The same effect may also take place indirectly—e.g., toxins from a distant focus of infection reaching the lungs via the blood stream.

Type 3.—The asthma results from an infection of the respiratory tract. In the case of nasopharyngeal infections, &c., the asthma is often "reflex." The history, bacteriological findings, and the absence of skin reactions to non-bacterial substances establish the diagnosis. The lowering of the vitality of the mucous membrane by the infection may encourage the development of minor degrees of sensitivity to non-bacterial substances of the inhalant type, usually resulting in multiple weak skin reactions (*Type 4*). Bacteriological examination reveals the primary cause.

IMMUNOLOGICAL INVESTIGATION OF ASTHMA PATIENTS

Skin tests.—The method of testing employed at the St. Mary's Hospital asthma clinic is the "prick" method (Freeman[11 12]; Harley[1]).

A drop of the extract to be tested is placed on the skin of the forearm or thigh and the latter lightly pricked once with a hypodermic needle through the drop at right angles to the surface. The drop is then gently wiped off with a pledglet of cotton-wool. A positive reaction consists of an urticarial weal with surrounding erythema about the site of the puncture, and is fully developed in 10 to 15 minutes. Control tests are performed with normal carbol-saline. Though much stronger extracts are necessary to elicit reactions by the prick than by the intradermal and scratch methods of skin testing, the prick technique is more exact, and as the amount of trauma inflicted on the skin is much less with this method, doubtful and pseudo-reactions are less frequent.

The rapidity and accuracy with which a patient can be tested with a considerable number of extracts make the prick test the best routine method for the clinic.

Bacteriological examination.—This includes (*a*) routine blood-agar plate cultures of swabs of tonsils, nasopharynx, and sputum; (*b*) special examination of fæces, urine, cervix, and other possible foci of infection, if there is any suggestion of an underlying toxæmia, as in cases with feeble skin reactions and normal respiratory tract flora. Tellurite media and anaerobic cultures of the fæces are frequently valuable for the isolation of pathogenic streptococci. In the absence of any obvious pathogens, auto-hæmocultures (pathogen-selective-cultures), which utilise the in-vitro bactericidal action of the patient's own blood on organisms to which he is immune and allow the growth of pathogenic organisms, often indicate the source of the trouble. Subcultures are made of the predominating pathogenic organisms for vaccine preparation.

TREATMENT

We are not concerned here with the palliative or symptomatic treatment of asthma, the correction of the "secondary non-specific factors" discussed at the beginning of this paper, or the surgical aspects of focal sepsis, but rather with the treatment of the underlying cause from the immunological standpoint. The success of this type of therapy depends on the accurate diagnosis of the type of immunological mechanism involved in the individual case.

Type 1 cases.—If the sensitivity is to a single substance or to a small number of substances which can be removed readily from the patient's surroundings or diet, *specific avoidance* gives excellent results. Specific desensitisation is indicated if specific avoidance is impossible or impracticable; the results in selected cases are highly satisfactory.

Type 2 cases, with multiple sensitivities and infections or toxæmias, usually respond best to vaccine therapy, with or without the above measures.

Types 3 and 4.—The rational treatment is vaccine therapy. Whether a stock or autogenous vaccine is employed, the commencing dose should not be more than 1 million organisms subcutaneously. The dose is repeated at 5–7 day intervals, and is cautiously increased till satisfactory results are obtained. After a few months of weekly injections, the interval between doses is gradually increased to one month. The optimal dosage and the length of treatment required varies greatly, but it is usually advisable to repeat the maximum dose at monthly intervals for at least six months to a year. When there is evidence of chronic bronchitis or frequent winter colds a short course of prophylactic injections each autumn is recommended.

It is notoriously difficult to express in figures satisfactorily and accurately the results of treatment in a group of asthmatics, in view of the variety of types of cases and their appropriate treatments. As an example of the results of treatment along the lines discussed above, I give brief notes on a series

of 20 unselected cases, taken strictly consecutively in the order of their presentation for investigation and treatment, from an arbitrarily fixed date.

ILLUSTRATIVE CASES

CASE 1.—Man aged 28. Asthma for 20 years; started after whooping-cough; no seasonal variation; no intervals of complete freedom; mild chronic nasal catarrh; frequent headaches and indigestion. Skin reactions: grass pollen, slight; horsehair, slight. Bacteriology: P.-N. (post-nasal) and tonsil swabs, pneumococcus in nearly pure culture; fæces, heavy growth *Streptococcus viridans*. Treatment with autogenous vaccine was followed by marked improvement. Occasional wheeziness mornings only; general health much better.

CASE 2.—Woman aged 37. Asthma since childhood; shortness of breath between attacks; migraine; heart action rapid; general health bad; 2 years' specialist treatment without effect. Skin reactions: negative. Bacteriology: P.-N. and tonsils, *S. hæmolyticus* predominating; fæces, numerous *S. viridans*. Autogenous vaccine. Slight improvement. Severity of attacks much reduced, but still short of breath, especially in the evenings and on exertion (probably cardiac).

CASE 3.—Woman aged 69. Moderate asthma for 3 years; history of asthma as a child; attacks mainly in winter; liable to colds and chills, which bring on the asthma; spa and physical therapy with slight temporary relief. Skin reactions: negative. Bacteriology: P.-N., staphylococcus; tonsils, sputum, and fæces, heavy growth of non-hæmolytic streptococci. Autogenous vaccine. No asthma from 2 months of starting treatment.

CASE 4.—Man aged 27. Allergic rhinitis for 7 years; attacks followed by asthma; chronic cough, scanty sputum; eczema as a child; turbinectomy 5 years ago with moderate temporary improvement. Skin reactions: grass pollen, horsehair, and feathers, all slight. Bacteriology: P.-N., Pfeiffer's bacillus predominating. Autogenous vaccine. Marked relief of rhinitis; no asthma attacks (two mild attacks rhinorrhœa with slight wheeziness during past 6 months).

CASE 5.—Woman aged 40. Asthma for 10 years; worse in winter; frequent colds; coffee often brings on attacks. Skin reactions: horsehair, feathers, and coffee, all slight. Bacteriology: P.-N., *S. hæmolyticus* and *viridans* predominating. Autogenous vaccine. Complete freedom from asthma.

CASE 6.—Woman aged 50. Asthma for 3 years; attacks chiefly during night; intervals of complete freedom, especially with change of surroundings; slight dry cough, no sputum; no history respiratory infections. Skin reactions: horsehair, marked; feathers, moderate; dog hair and milk, slight. Bacteriology: P.-N., nil abnormal. Treated by removal of horsehair and feather bedding, &c., and avoidance of milk. Result: complete freedom from asthma.

CASE 7.—Woman aged 65. Moderate asthma for 4 years; chiefly night and morning; no evidence food or locality factors; general health fair. Skin reactions: negative. Bacteriology: P.-N., diphtheroid bacillus predominating. Autogenous vaccine. Marked improvement; occasional mild attack only.

CASE 8.—Woman aged 53. Asthma for 5 years; attacks day and night; frequent colds; always "chesty"; moderate amount sputum. Skin reactions: not done. Bacteriology: P.-N., nil abnormal; sputum, *S. hæmolyticus* and *viridans* predominating. Autogenous vaccine. Moderate improvement; attacks much less severe with longer free intervals.

CASE 9.—Woman aged 28. Asthma for 2 years; started after influenza; frequent colds which bring on attacks; no food or locality factors. Skin reactions: negative. Bacteriology: P.-N., pure culture of pneumococcus. Autogenous vaccine. Marked improvement. Free of asthma except for occasional slight wheeziness.

CASE 10.—Man aged 42. Asthma 10 years ago, following head cold; asthma for past 5 months; attacks getting more severe; nasal catarrh 6 months. Skin reactions: negative. Bacteriology: P.-N. and tonsils, heavy growth of *S. viridans*. Autogenous vaccine. Marked improvement; slight morning wheeziness only.

CASE 11.—Woman aged 24. Severe asthma for 3 years; constant cough with moderate amount sputum. Skin reactions: negative. Bacteriology: P.-N. and sputum, staphylococci and Gram-negative bacillus; fæces, *S. viridans*. Autogenous vaccine. Moderate improvement. Free of acute attacks; much longer intervals of complete freedom.

CASE 12.—Man aged 35. Asthma since childhood; attacks very severe in winter; frequent bronchitis; abundant sputum; no intervals of complete absence of asthma. Skin reactions: not done. Bacteriology: P.-N. and sputum, staphylococci and *Micrococcus catarrhalis*; fæces, *S. hæmolyticus*. Autogenous vaccine. Much improved. Free of acute attacks; bronchitis much better; slight morning wheeziness; general health much better.

CASE 13.—Woman aged 38. Asthma for 6 years; started after chest cold; nasal catarrh for 8 years; nasal polypi removed twice without effect on asthma. Skin reactions: negative. Bacteriology: P.-N. and tonsils, *S. hæmolyticus*; sputum, staphylococci; fæces, nil abnormal. Autogenous vaccine. Quite free of asthma. Appetite and general health much better; putting on weight.

CASE 14.—Woman aged 44. Severe asthma for 7 years; attacks precipitated by house dust. Skin reactions: house dust, marked. Bacteriology, not investigated. Desensitised to house dust. Result: completely free of asthma; general health much improved.

CASE 15.—Woman aged 40. Allergic rhinitis with mild asthma for 4 years; worse in winter. Skin reactions: negative. Bacteriology: P.-N., *M. catarrhalis* and staphylococci. Autogenous vaccine. Completely free of rhinitis.

CASE 16.—Girl aged 12. Asthma for 8 years, worse in winter; tonsils removed 7 years ago with no improvement of asthma; no indication food factor; delicate child, under weight, general health poor. Skin reactions: negative. Bacteriology: P.-N., *S. viridans* in pure culture. Autogenous vaccine. Quite free of asthma; gaining weight; general condition much better.

CASE 17.—Woman aged 22. Asthma and allergic rhinitis for 7 years; no marked seasonal variation; frequent "bad throats"; chronic nasal discharge; tonsils and adenoids removed 5 years ago, with temporary improvement only. Skin reactions: negative. Bacteriology: P.-N., *S. viridans* predominating. Autogenous vaccine. Moderate improvement. Absence of acute attacks; much longer intervals of complete freedom.

CASE 18.—Boy aged 7. Asthma for 3 years, mainly in winter; frequent cough; tonsils and adenoids removed one year ago. Skin reactions: negative. Bacteriology: P.-N., mixed *S. hæmolyticus* and *viridans*. Autogenous vaccine. Marked improvement; only one slight attack in 3 months.

CASE 19.—Girl aged 20. Allergic rhinitis for 2 years; occasionally slight tightness of breath; nasal polypi removed 8 months ago, slight temporary relief only. Skin reactions: orris-root, moderate; horsehair and grass-pollen, slight. Bacteriology: P.-N., pneumococcus and Gram-negative bacillus. Treated by avoidance of orris-root face powders and by autogenous vaccine. Marked improvement.

CASE 20.—Man aged 74. Asthma for 14 years, following influenza and bronchitis; asthma as a child; no seasonal, locality, or food factors, except liability to colds in winter, which increase the asthma. Skin reactions: not done. Bacteriology: P.-N. and sputum, *M. catarrhalis*; fæces, non-hæmolytic streptococcus. Autogenous vaccine. No improvement in general tightness of breath and wheeziness but has been free of colds and of exacerbations of the asthma.

CONCLUSION

The tendency of the "advanced allergist" to consider all asthmatics in terms of skin reactions to

non-bacterial substances, and to institute treatment accordingly, produces brilliant cures in certain cases (Type 1), but leads to disappointing results where the primary cause is bacterial. I feel this is due partly to the use of the intradermal method of skin testing which frequently produces "false positive" reactions (that are liable to be misinterpreted by the enthusiast) in the absence of the corresponding *clinical* sensitivities, and to the failure to make a routine bacteriological examination of all patients in whom the skin reactions are multiple and indistinct.

My thanks are due to Dr. John Freeman, director of the asthma clinic, St. Mary's Hospital, for his advice and criticism.

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Clinical and Laboratory Notes

A METHOD OF SPLINTING SEPTIC FINGERS

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THE healing of septic fingers is assisted by firm fixation on a splint that ensures absolute rest in a good position. Spread of infection is minimised and pain, other than that due to pus under tension, is relieved. Adequate fixation entails splinting the whole finger and the tendons moving that finger; it is therefore essential in addition to splint the wrist. The best position of fixation is "the position of function"[1]—i.e., dorsiflexion of the wrist and semiflexion of the metacarpophalangeal and interphalangeal joints, and, in the case of the thumb, abduction and slight flexion.

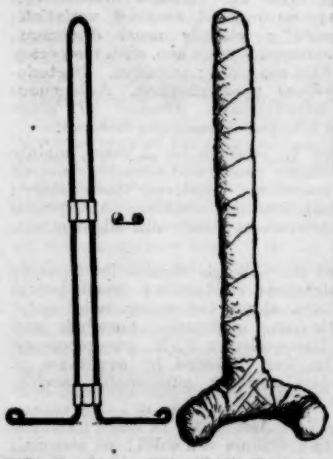

FIG. 1.—The splint. Left, the wire frame, and right, covered ready for application.

THE SPLINT

The Böhler finger splint [2] is well suited to the purpose. It is very light and leaves the unsplinted fingers free to move through their full range. Its cheapness and simplicity make possible its universal application in the treatment of septic fingers. The splint is best made of 3 mm. gauge soft iron wire as used by Böhler (Fig. 1). It is T-shaped, 11 in. long and 4½ in. wide at the cross-piece. This is the most suitable size. A straight piece of wire 28 in. long is bent double. The free ends, 3 in. from the end, are bent out at right angles to form the short cross-piece of the T, and the ends themselves are then bent over. The doubled wire of the long limb is held ¼ in. apart by means of two small flat slips of "tin" bent over the wires and soldered into position at the base and in the middle. The splint is padded by winding on dressmakers' wadding in strips 2 in. wide and bandaging firmly over the wadding. The cross-piece is moulded to the forearm.

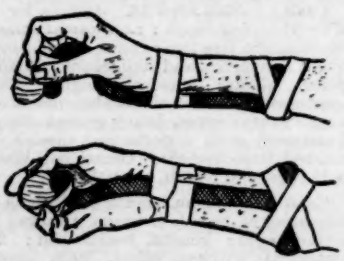

FIG. 2.—Splint applied to the middle finger.

APPLICATION OF THE SPLINT

The firmly padded splint is bent exactly to the required shape. It gives the best support when fixed on the palmar aspect, where it should rest in the groove between the thenar and hypothenar eminences, whichever digit is to be splinted. A small dressing is put on the finger or thumb and the splint fixed in position with 1 in. strapping (Fig. 2, middle finger; Fig. 3, thumb). Usually it is enough to fix the cross-piece of the splint with a figure-of-eight, the wrist being held by a single band looped round the splint to prevent lateral movement. The finger is fixed with another single band over the dressing. More dressing may then be placed over the infected finger and the splint, and the whole lightly bandaged.

FIG. 3.—Splint applied to thumb.

The splint is fixed only with bandages if the finger is being treated with hot baths. For severe infections of the thumb it is placed on the dorsum, the base of the splint being incorporated in a plaster cuff and the wrist fixed in a light dorsal slab (Fig. 4). The palm and the proximal part of the affected digit are easily exposed for observation in every case. Often the dressing need not be disturbed for some days if vaseline is used to dress the wound. When the dressing is changed the splint is not removed, and the padding can be replaced if it is soiled with discharge.

FIG. 4.—Splint and plaster cast when frequent dressings are not needed.

Efficient splinting is an adjunct to the accepted operative, local, and general methods of treating septic fingers, and there can be no doubt that it is a most important factor in treatment. If repeated

local applications interfere with splinting, then they should be stopped.

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MELANOTIC SARCOMA

SURVIVAL 14 YEARS AFTER PRIMARY OPERATION

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A SURGEON may well hesitate to publish notes about a single case of a particular disease; but melanotic sarcoma is so generally regarded as one of the most malignant types of neoplasm and one with such a hopeless prognosis that the history of a case, with a long period of survival in good health, may help with the records of other similar cases to dispel the prevailing gloom associated with the treatment of this condition and so justify publication. Raymond Johnson wrote: "There is no doubt that melanotic sarcoma is a most malignant tumour," and "the extreme malignancy of melanotic sarcoma is universally recognised," adding to this as at least partly explaining the gravity of the condition, "while the primary growth in the skin still remains an inconspicuous and sometimes undetected pigmented spot, extensive deposits of growth may have already occurred in the lymphatic glands and metastases may be widely distributed in the viscera and bones." William Boyd, however, states: "Even after the lymph nodes are involved, removal of the primary tumour with the enlarged glands and intervening lymphatics may be followed by cure."

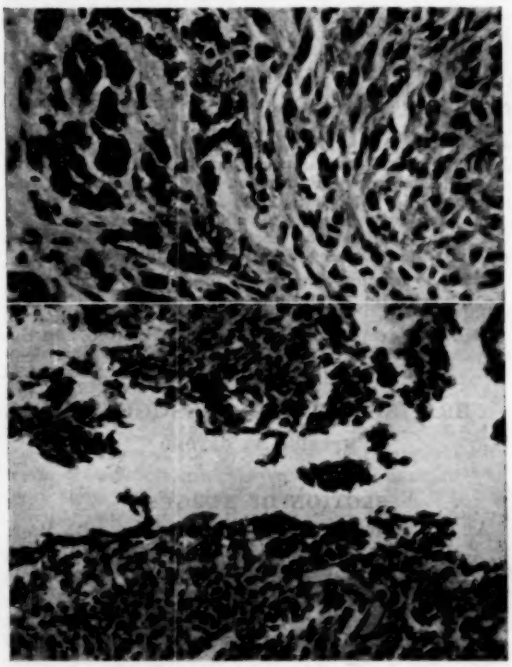
Turning to clinical records, one finds little encouragement, a diagnosis of melanotic sarcoma being "virtually a death warrant" (Bailey and Love).

Bloodgood states that, of 200 cases of the disease he had treated during 30 years, only 1 had remained well for 5 years. Of 38 cases treated at the Mayo Clinic, Broders and MacCarty record that only 1 passed the 5-year limit, dying of metastases in the eighth year. In a report of 50 cases of malignant melanomas arising in moles, Butterworth and Klauder state that the majority of patients succumb within 3 years, the minority within 3–5 years. Of Gleave's 20 cases, 2 only were living, one 5 and the other 7 years after the original treatment. Dittrich reported a case still living at the end of 9 years. Farrell, in an analysis of 182 patients seen at the Mayo Clinic, gives 5 years as the average life of the 59·1 per cent. given early surgical treatment, but only 2½ years when surgical treatment was delayed. Of the cases treated at the Clinic, one survived 14, another 12½ years; while one case operated on elsewhere presented itself at the Clinic with metastases 20 years later. Finally, in this incomplete summary of clinical results, reference may be made to those obtained at the Radiumhemmet, Stockholm. These in the main represent the results of combined surgery and irradiation treatment and afford more cheerful reading than those referred to previously. I. M. Schnargel's reports refer to 81 cases, 70 of which were given treatment. In the 81 cases the mortality was 71·6 per cent.; 23 were living, 14 having been observed over a period of 5 years, and 6 over a period of 10 years, the longest duration of the last group being 11 years 4 months—the treatment electro-endothermy without irradiation. This patient was alive and well at the time of reporting.

CASE REPORT

The case now to be described is that of a medical man coming under observation at the age of 50.

He had developed in the outer part of the left eyebrow sometime between 1914 and 1916 (he is not at all certain about the date) a pigmented spot, not raised above the surface and in appearance like a large rather deeply coloured freckle. About 1916 he attempted to remove this pigmented area by the application of carbon dioxide snow. The immediate result was good and nothing of the pigmentation was observed for nearly two years, when carbon dioxide snow was again applied. The result this time was not so successful. The pigmented spot became much less evident; but a slightly scaly surface was left which the patient constantly disturbed with a finger-nail. In 1921 a very small pigmented wart had developed and in July of that year carbon dioxide snow was again applied. The wart soon reappeared after treatment but remained quite small. In February, 1922, a further application of snow removed the wart, but a small bluish-grey swelling was left. In the following month



Above: Photomicrograph of the primary tumour on the eyebrow showing, on the right, the acinous arrangement of the cells depicted by Boyd and, on the left, heavily pigmented cells. (Magnification × 450.)

Below: Cervical gland excised at the same time as the primary growth. The darker groups of cells contain melanin. (Lower magnification than above.)

I first saw the patient after an attack of influenza, during which he noticed a small tender lymphatic gland, on the left side of his neck, just below the mandible. Shortly after this Sir Lenthal Cheatle was also consulted and agreed with my recommendation of immediate removal of the discoloured tissue in the eyebrow. This was done on March 20th, the small lymphatic gland being excised at the same time. The pathological examination of these tissues revealed that the primary growth was a melanoma with a secondary deposit in the gland.

On March 31st, 1922, under intratracheal gas and oxygen given by the late Dr. Howard Jones, I performed a block dissection of the anterior triangle of the neck. From below, fascia and lymphatic glands were removed in one continuous sheet. The great vessels were laid bare at the bottom of the wound and particular attention was paid to the removal of all areolar tissue lying in front of and behind these structures. The sublingual and submaxillary salivary glands were removed with the fascia and the dissection carried up to the parotid, the lower part of which was removed to give freer access to the

upper carotid group of glands. This involved the division of some of the secondary branches of the cervicofacial nerve with resulting paralysis of the angle of the mouth on this side. Except where two tubes were provided for post-operative oozing and for secretion from the cut parotid gland, the wound healed by first intention.

On April 27th—i.e., a month after the operation—radium treatment was begun by the late Dr. Robert Knox at the Cancer Hospital, 200 mg. of radium in a 3 mm. lead filter being applied for four hours each day to various parts of the face and neck so that at the end of six or seven treatments the whole of the area of the operation had been covered. Over the eyebrow, divided into two areas, 100 mg. of radium was applied for two hours. Courses of such treatment were subsequently started on May 23rd, June 27th, August 3rd, and Oct. 12th, 1922; Jan. 1st, July 7th, Sept. 19th (two treatments only), and Dec. 14th, 1923; May 4th and Sept. 24th, 1924—the amount of radium in the last two series of treatments being reduced to 125 mg.

The patient, who returned to work six weeks after the last operation, called my attention in the course of the following 18 months to various small lumps which he had noticed in his neck, and, in all, six of these were excised. Only one of them—namely, that removed on July 26th, 1923—proved to be a secondary deposit in a gland. This small subcutaneous nodule about 0·75 cm. in diameter was situated at the junction of the two operation scars, about 2½ in. above the clavicle. There has been no subsequent recurrence, and the patient has since led an active life and is at present in good health.

The photomicrographs, taken by Mr. F. Welsh of the Medical Research Institute, Mount Vernon, show the histological structure of the original growth and of the secondary deposit in the gland first removed. In the former, the growth has a rather alveolar structure as befits a tumour regarded by many authorities as a carcinoma rather than a sarcoma; but in the glandular deposit the cells have more the appearance of a sarcoma.

Without entering into the classification of malignant melanomas, their tendency to spread (as in the case now reported) by way of lymphatic vessels and glands in the first instance and only later by the blood-vessels must be borne in mind in considering treatment. As to the question whether these growths should be dealt with by surgical means or by irradiation, wide excision of the primary growth and thorough removal of the glands and lymphatics, whether the glands are enlarged or not, followed by subsequent irradiation appears to offer the best prospect of permanent cure. Unless the surgery is radical, it is likely to hasten rather than retard a fatal termination of the disease.

I have to thank Prof. J. Woodburn Morison, director of the radiological department of the Cancer Hospital, for supplying me with a record of the post-operative irradiation treatment carried out by his predecessor, Dr. Robert Knox.

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BRITISH MEDICAL ASSOCIATION

MEETING AT OXFORD

SECTION OF SURGERY

AT one of the meetings of this section with Prof. G. E. GASK, the president, in the chair, short papers were read by workers from the surgical research laboratories of the Royal College of Surgeons of England and of the University of Edinburgh.

Hypertension in Nephritis

Mr. R. J. KELLAR and Dr. W. M. ARNOTT (Edinburgh) described the results of experiments on hypertension. Mr. Kellar illustrated a method of taking the blood pressure of rabbits by isolating a loop of the carotid. To produce glomerulo-nephritis oxalate had been used at first, but since last year they had employed a toxic serum obtained from ducks that had received injections of normal rabbit kidney. The nephritis produced by injecting this serum into rabbits was much more like human nephritis. There was acute glomerulo-nephritis with hypertension and albuminuria; sclerosis of the glomeruli could be seen later, and kidneys removed 21 days after the injection showed definite fibrosis of the glomeruli and red-cell infiltration.

Dr. ARNOTT described attempts to determine whether the hypertension of this form of glomerulo-nephritis was renal or extrarenal in origin. Some of the experiments had been carried out with oxalate and some with nephrotoxic serum. During the progressive fall of blood pressure induced by bilateral nephrectomy no hypertensive response followed oxalate injections. The effects of denervation were then tried. The right kidney, having a short pedicle, was removed, and the left kidney was denervated at its pedicle. Oxalate injected in rabbits with right-sided nephrectomy and left-sided denervation gave no rise of blood pressure; but if the left denervation had been omitted the pressure rose. The experiments were repeated, using nephrotoxic serum, and with the same result. It was then suggested that the failure of hypertension might be due to lessening of the renal damage in the denervated kidney. This was disproved. The conclusion was that integrity of renal innervation was essential for the production of hypertension in experimental glomerulo-nephritis.

Intestinal Obstruction

Dr. DAVID SLOME and Mr. G. C. KNIGHT (London) have been investigating the nature and origin of the toxin in intestinal obstruction. Dr. Slome said that, even in strangulation of the whole of the small intestine, the amount of fluid-loss was not enough to account for death in the experimental animal. Some other factor had to be looked for. Two methods of strangulation of medium-sized intestinal loops were used. The first, which consisted in individual ligature of vessels supplying the loop, rendered the gut wall non-viable at the end of 24 hours, when toxic fluid could be demonstrated in its lumen. The second, in which a rubber band was tied round the loop, was only a partial strangulation, since the gut was viable at the end of 24 hours. Toxic fluid could not be demonstrated in this loop until after the lapse of 24 hours. The fluid caused depressor effects on the blood pressure of animals into which it was injected, and sometimes killed them. The toxic substance could be shown to be present in the mesenteric venous blood long before it was present in the peritoneal cavity. Cannulisation of the portal vein was used: 2 c.cm. of blood tested before strangulation of an intestinal loop was slightly *pressor* in effect; 2 c.cm. removed two hours after strangulation was *depressor*. Fluid collected from the thoracic duct, before and after strangulation, also showed the presence of a

toxin. This substance did not appear to a normally occurring toxin abnormally absorbed, but was actually produced in the wall of the intestine as a result of the strangulation. Its nature was still under investigation. The investigators seemed to have ruled out the possibility of its being either histamine or acetylcholine. In cases of strangulation in the human being it had been possible to show the presence of a depressor substance in the dialysate of the urine. Examination of the peritoneal fluid in such cases showed that, while at the end of two hours' strangulation there was no evidence of toxin, at the end of 24 hours the fluid was definitely toxic. In one case the gut at the end of 72 hours was found to be viable, yet in spite of relief of the obstruction the patient died five hours later; the peritoneal fluid was extremely poisonous.

Mr. IAN AIRD and Mr. W. K. HENDERSON (Edinburgh) also reported the results of experiments on intestinal obstruction. Mr. Aird said that the present practice of surgeons in cases of intestinal strangulation was to resect the loop if it was not viable and to return it to the peritoneal cavity if it seemed capable of recovery. The first group of experiments dealt with cases of complete strangulation. The strangulated loops had been enclosed in rubber bags and the fluid collecting in the bags had been studied. Within 24 hours of strangulation the fluid was shown to be extremely toxic, but its absorption into the animal's circulation was apparently only from the peritoneal surfaces, for the animal remained alive as long as the bowel was enclosed in a bag. Chemical investigation of the toxic fluid showed that there were at least two distinct toxic substances, the one a complex protein of euglobulin type, which was probably of bacterial origin, the other non-protein and diffusible. This latter was the depressor factor, and was of the nature of histamine. Certainly the histamine content of the transudate, tested by such pharmacological reactions as the effect on rat's uterus and on guinea-pig's ileum, increased steadily in the first 24 hours after strangulation of the loop. The effect of incomplete strangulation, by gaseous distension of the gut wall, had also been tested. At first distension produced a rise in blood pressure, but this was followed by a fall. A release of the pressure within six hours was followed by rise of pressure, owing to augmentation of the blood volume by absorption of the fluid from the distended gut. After six hours, however, the effect of releasing the distension was to cause a fall of the pressure. In one case release of pressure after 17 hours was followed by death of the animal in five minutes. This result was obtained even if there had been complete denervation of the bowel wall. It was, therefore, not a nervous reaction, but was presumably due to a depressor substance entering the circulation. That absorption did occur from the vessels of the damaged bowel wall could be proved by injecting strychnine into the vessels. On release of obstruction the animal died in convulsions. The clinical lessons of these experimental findings were: (1) in dealing with a completely non-viable loop of intestine, great care should be taken to remove all the toxic transudate from the peritoneum; (2) resection should be done more often in borderline cases; and (3) in all cases with much distension, gradual relief of the distension was at least as important as it was in prostatic distension of the bladder.

Acute Toxæmia in Burns

Mr. A. N. ROXBURGH (Edinburgh) described experiments done in collaboration with Mr. J. S. JEFFREY. Three main explanations were advanced, he said, to account for the profound constitutional effects of burns—viz., increased concentration of the blood, bacterial infection, and the action of a toxin. The last was likely to be the true one. His experiments had demonstrated the toxicity of fluid from burnt areas. To eliminate secondary bacterial infection, skin flaps had been raised and the inner aspect of the skin burnt. An œdema tumour resulted and the fluid expressed from this was used for injection. In some experiments the fluid was rendered sterile, in some it was filtered, and in some it was used in the crude state. The effects were not constant but the toxicity of the fluid was manifest in most of the animals on which it was tested. The toxin appeared as early as six hours after the burn, but there was more of it at the end of 48. The cause of death in animals receiving the injections was not clear. The blood pressure fell, but although it might fall as early as two minutes after injection, it sometimes did not fall till just before death. Autopsy showed degenerative changes in the centre of the liver lobule. The toxin was evidently non-bacterial in origin, and was a higher protein derivative associated with the globulin fraction; it was presumably produced by tissue autolysis.

Traumatic Shock.—Sympathetic Stimulation

Mr. L. F. O'SHAUGHNESSY and Dr. D. SLOME (London) reviewed the results of their experiments on shock. Mr. O'Shaughnessy said that the toxic theory of traumatic shock was now abandoned. That left for consideration the theory of hæmorrhage and fluid-loss into the tissues, and the theory of the nervous origin. Although there was no doubt that fluid-loss had been under-estimated and was important, it was by no means the sole or dominant factor. There was no relation between the amount of fluid-loss and the rapidity with which death supervened; while transfusion into the animal of an amount of fluid equal to, or greater than, that lost into the traumatised limb failed to restore blood pressure permanently. Shock still developed when fluid-loss to the limb was prevented by preliminary ligature of the vessels. Unfortunately this experiment was vitiated by the fact that an ischæmic limb was also an anæsthetic limb. To overcome this difficulty the circulation had been maintained in the limb by anastomosis with the carotid vessel of a sound cat. Even then, however, shock developed and it could only be nervous in origin. It had been possible to obtain records of the barrage of impulses coming from the traumatised limb by attaching an electrode to the muscle and leading off to a cathode and recording by photography. Two hours after the trauma there was a burst of impulses, although immediately after the trauma the impulses were slight.

Mr. W. A. D. ADAMSON (Edinburgh) described an apparatus designed to expose animals to a prolonged sympathetic stimulation. By such stimulation an endeavour was being made to reproduce sympathetic diseases such as Raynaud's disease. A coil was buried in the animal and it lived inside another coil which acted as the induction coil. The buried coil consisted of 500 turns of fine copper wire, with a rectifier attached, two electrodes being led off from the coil to the particular nerve that was to be stimulated. The animal lives inside the large coil as if it were a cage. It has been proved that the presence of the small coil within its body in itself does no damage.

Skin Sutures.—Nerve Grafting

Mr. J. R. J. CAMERON (Edinburgh) said that skin appealed to him as a suture material because it was

living and because it was always present at operation, often in excess. He thought it might be particularly valuable in repair of herniæ and in tendon reconstruction. He had experimented with pig-skin, using it as an auto-transplant, for suture of the abdominal wall, and for repair of hernia artificially produced in animals. The skin of the dorsum was used, the epidermis being scraped off in the preparation. It gave a very efficient result. The architecture of the skin remained in the subsequent section of the repaired wound, the one disadvantage being the tendency to persistence of epithelial elements. Hair follicles, sebaceous glands, and in one case implantation cysts had all been seen; but, on the whole, scraping gave a satisfactory enough removal of epithelium for practical purposes, and the skin became replaced by a growth of firm connective tissue in functional relationship to its surroundings.

Mr. F. H. BENTLEY (London) described the results of experiments on nerve grafts, carried out by himself and Miss MARGARET HILL. Their purpose had been to investigate the relative efficiency of fresh and degenerated nerve as grafts, and also to discover the factors which influenced the growth of the nerve axons across the graft. They had found that, as far as functional return was concerned, there was almost nothing to choose between fresh and degenerated nerve. The average of five cases showed return of function in 61 days with fresh grafts, and in 57 days with degenerated grafts. Histological examination revealed that the axons had grown a centimetre further in the degenerated graft. In most of their experiments 3 cm. of the external popliteal nerve of the cat had been excised from the thigh and grafted into the popliteal nerve of the other side. The points of most practical importance were the use of a graft of the same circumference as the nerve to be grafted, accurate apposition, and avoidance of sutures placed in the substance of the nerve. By observing these details in the technique the amount of scar tissue was reduced; this was of great importance, since it was the presence of scar tissue that interrupted the growth of the nerve axons. In some cases of marked scarring nearly all the axons appeared to be lost in the scar.

Hypothalamic Localisation

Mr. A. S. KERR, describing experiments carried out in collaboration with Dr. JOHN BEATTIE on hypothalamic localisation, said that one of the main functions of the hypothalamus was to act as a higher centre for the control of the autonomic or visceral nerves. The posterior part controlled the sympathetic, the anterior part the parasympathetic. The particular method of investigation in these experiments was direct electrical stimulation of the area and observation of its immediate results. So small an area as the hypothalamus called for a special method of stimulation; they had used a stereotaxic instrument which allowed accurate introduction of the electrode. They had studied particularly the effect on the function of the urinary bladder. Stimulation of the supra-orbital (i.e., the anterior) part of the hypothalamus produced increase of bladder tonus. Preliminary use of atropine to throw out the parasympathetic control of the bladder, followed by stimulation of the same area, had no effect on bladder tonus. Stimulation of the posterior hypothalamus had the opposite effect. A point of stimulation had also been found which produced a rhythmical increase in the activity of the pyloric muscle.

Dr. JOHN BEATTIE (London) made some general observations on the work described before the section. Much progress had been made towards understanding the importance of the nerve element in traumatic shock and the cause of the failure of blood transfusion in combating this condition. Both the London and Edinburgh schools had proved the action of a depressor substance in the production of the symptoms of intestinal strangulation. By the experiments on hypothalamic localisation they hoped in time to learn much more of the visceral action of the sympathetic and its control.

Sir DAVID WILKIE commented particularly on the intestinal experiments, and spoke of the importance of emptying the toxic fluid from the intestine in cases of strangulation, of resecting bowel in cases where any doubt arose as to viability, and of gradual decompression of distended coils of intestine, to avoid flooding the system with toxic products. He said that the presentation of their subject matter by these young research workers had been a lesson in clear exposition, and proved that the clear thinking engendered by research was a valuable training for those who were to become the teachers of the medical schools.

SECTION OF OTO-RHINO-LARYNGOLOGY

Mr. LIONEL COLLEDGE, president of the section, took the chair at a meeting held on July 22nd when a paper on

Acute Streptococcal Infections of the Middle Ear

was read by Mr. W. M. MOLLISON (London). He said that this really included all acute aural infections, as the streptococcus was the most common organism responsible. The infection reached the middle ear from the nasopharynx along the Eustachian tube by the continuity of the mucous membrane, and he thought it was rare for septic material to be blown directly into the tympanum through the tube, although he knew of one case in which this had almost certainly occurred. He had also had only one case of acute otitis media following the passage of the Eustachian catheter and inflation, so that this too must be a rare occurrence. The commonest cause was an acute upper respiratory infection such as the common cold, influenza, tonsillitis, or sinusitis. Fresh-water bathing was a common cause in summer, and this was due to the dilution of the protective nasal mucus, which was why he was opposed to the use of nasal douches. Resistance also played a part and exposure of the extremities to cold and damp should be avoided. He recalled a suggestion of Mr. T. B. Layton's that the virulence of the streptococcus might be enhanced by the presence of another micro-organism or virus, and quoted one case to illustrate this point. Prophylaxis logically followed upon ætiology and consisted in keeping the nasopharynx clean by the removal of adenoids, if infected, and clearing up of septic foci in the nose and paranasal sinuses. Fresh-water bathing and nasal douching should also be forbidden, and patients prone to colds given a course of anti-catarrh vaccine treatment. Patients who were Dick positive could be immunised against the hæmolytic streptococcus, and this is useful in scarlet fever or influenza epidemics. The reaction to the hæmolytic streptococcus varied enormously, and it was impossible to predict the course the illness would run in any particular person. He was in favour of incision of the red drum membrane of acute otitis if there was pain with high fever. Where there was uncomplicated mastoiditis he preferred to tackle the patient rather than the ear and give serum or a

blood transfusion first. These measures might avoid an operation or save life, and together with pentnucleotide injections marked an advance in the treatment of severely ill patients of this type. Prontosil appeared to be another weapon for use against the hæmolytic streptococcus, but he had had no personal experience of it.

Mr. E. D. D. DAVIS (London) read a paper on

Acute Streptococcal Infections of the Throat

He recalled the various names given in the past to apparently different infective processes in the pharynx and larynx, and that Sir Felix Semon in 1895 had stated that they should perhaps be considered different phases of one pathological process. He would call them all streptococcal infections, and he recognised two clinical degrees of the inflammation: (1) tonsillitis with more or less extension to the surrounding tissues; (2) a gangrenous invasion with toxæmic or septicæmic symptoms, often beginning with a tonsillitis—a later stage of the first group. The first type was more common in children and young adults, and the second in elderly patients, often as a complication of some systemic disease. The local symptoms varied with the degree of spread of the inflammation, but pain and difficulty on swallowing were common, and dyspnœa due to glottic œdema might occur. Cervical adenitis was usual, and indicated some attempt at localisation of the infection. Rarely there might be a brawny œdema of the soft tissues of the neck—Ludwig's angina. The streptococcus was the most usual causal organism, but the pneumococcus was often found with it in acute infections of the throat; it might be difficult to say which was the primary invader. R. G. Henderson had described the natural history of the disease due to the pneumococcus, and Mr. Davis said he had nothing to add to this description. The spread of infection from one patient to another was a well-recognised feature of the streptococcal disease, and in this connexion he would put in a plea for small wards and adequate accommodation for the isolation of suspects. Epidemics had been traced to infected food and water, the Brighton epidemic of 1929 being an example of a milk-borne one. Scarlet fever might be a cause of a streptococcal infection of the throat, and freshwater baths were sometimes another.

He regarded these infections as serious, and said that they should always be taken seriously. A successful result demanded the coöperation of the surgeon, physician, and bacteriologist. Swabs of the throat, blood cultures and counts were all necessary. Antidiphtheritic serum should be given if there was any doubt, without waiting for the result of the throat swab. In streptococcal and pneumococcal infections the appropriate sera should be used. Blood transfusion and immuno-blood transfusion might be necessary. He had tried prontosil in two cases, but had observed no especially good effects. The usual general measures to combat weakness, sleeplessness, and pain must be employed, and the surgeon might not only have to deal with suppuration but also to perform tracheotomy. Apart from the complication of septicæmia (for which certain German surgeons have ligatured the internal jugular vein), there might be (1) abscess formation in connexion with the tonsil of which the supratonsillar abscess or quinsy was the most common variety. Occasionally, when this collection of pus formed in the lower pole, enucleation of the tonsil had been performed, but usually incision was employed; (2) a parapharyngeal abscess with the pus tracking into the deep fascial planes of the neck, or suppuration of a lymphatic gland. Such an abscess had sometimes been the cause of a secondary hæmorrhage from one of the great vessels of the neck.

Tonsillectomy during the acute stages of the infection had many advocates. The operation was difficult owing to bleeding, which was apt to recur. There was also the risk of spreading the sepsis. The upper pole of the tonsil had been removed or dislocated from its bed to drain an abscess, and tonsillectomy was done a few days later. Trismus could be abolished by the injection of a local anæsthetic through the anterior pillar above the last lower molar. In the treatment of cervical adenitis he said that a gland should never be incised until it is reasonably certain that pus was present, as too early incision did more harm than good. Incision should be free and the loculi of the abscess broken down with the finger. The fulminating case occasionally required tracheotomy, and the need was generally sudden. In his experience these cases were nearly always fatal, in spite of prompt relief of obstruction, and he felt that every effort should be made to avoid tracheotomy.

Dr. H. T. GILLETT (Oxford) agreed with Mr. Mollison that the streptococcus is the most usual cause of otitis media and mastoiditis. He thought that the use of vaccines might profitably be more frequently employed in the acute cases, and described some cases of his own illustrating this.

Sir STCLAIR THOMSON (London) said that it was often difficult to decide which organism was the primary invader. He agreed that the physique of the patient was no indication of the prognosis. He also agreed that tracheotomy should be postponed, and wondered whether it should be done at all. He thought that nasal douching was a useful measure, and hoped Mr. Mollison would make no objection to nasal "cleansing." He advised the avoidance of morphine and thought that the stimulus of a little pain perhaps enabled the patient to marshal his resistant forces.

Dr. JAMES ADAM (Glasgow) said that he had successfully used prontosil in a case of otitic meningitis with streptococci in the cerebro-spinal fluid, but would not like to stress this. The pneumococcus might be the cause of more severe infection than the streptococcus, and it could also give rise to ward epidemics.

Dr. F. E. CAMPS (Chelmsford) had investigated epidemics in Chelmsford, Felsted School, and his own hospital. This last epidemic, in a ward, had been worked out bacteriologically from the epidemiological point of view. He showed diagrams which portrayed the infection travelling from bed to bed, and the cessation of spread when isolation measures were taken. He pleaded that streptococcal cases be treated as infectious and isolated from the start. He had used prontosil a good deal and was disappointed with the results.

Dr. R. FRANCIS (Sydney) thought that the syndrome due to the *Streptococcus mucosus* ought to have been mentioned. It was essentially a silent infection, and might have done a good deal of damage before discovery. Thromboses might follow the fulminating throat infections, as Mr. Davis had said, and he thought the German method of treating this by ligature of the internal jugular vein was valuable. He described how tracheotomy could be performed on the patient in his own bed.

Dr. E. LÜSCHER (Berne) thought that perhaps the prognosis depended upon the different types of

streptococcus. He said that in his country tonsillectomy in the acute stage of the infection was not favoured; it was occasionally done, but the convalescence was always stormy. It did not, however, seem to be dangerous. Ligature of the internal jugular vein was sometimes necessary, and one was always surprised at the extent of the thrombosis. He had used prontosil, but had had no constant results.

Mr. E. WATSON-WILLIAMS (Bristol) thought that cross-infection in wards could be overcome by allowing more space between beds.—Mr. M. VLASTO (London) said that the bathing pool as a source of infection was not as commonly recognised as it should be. Any child who has had trouble with his ears should be forbidden to bathe.—The CHAIRMAN in closing the discussion said that, in general terms, when the prognosis was doubtful, it should be given as good. Tracheotomy was rarely necessary, but was not always then fatal. He had had a case of severe aural infection that had defied all other methods of treatment, but which had reacted very favourably to the injection of a prontosil derivative.

Dr. GABRIEL TUCKER (Philadelphia) read a paper on

Inflammatory Tumours of the True Vocal Cords

and said that this was the most frequent site of inflammatory and neoplastic lesions, owing to the almost continuous use to which the cords were subjected, with consequent trauma. When a tumour mass was attached to a cord, the area became the seat of irritation and the cord was set in vibration. This local irritation caused an increase in size of the tumour mass, a vicious circle being thus set up. The muscles of the larynx were also called upon to supply an increased force to produce a tone from the abnormal cord, and a vicious vocal mechanism was acquired. Many cases had convinced him of this sequence of events. The point should receive attention in the after-treatment of these cases—a period of vocal rest and a proper method of voice production should be secured.

His cases showed a higher percentage of inflammatory tumours in the total incidence of chronic laryngeal tumours than was generally recognised. The pathological picture was of granulation tissue, and there was no special portion of the cord more particularly affected, except in contact ulcer, when the site was always the vocal process. Acute infection in recurring attacks was the chief cause, combined with over use and improper use of the inflamed larynx. In the production of acute inflammation, upper respiratory infections, septic teeth, excessive smoking, alcoholism, constant inhalation of dust and irritating vapours, and shouting were all important. The earliest symptom was impairment of voice and early vocal fatigue. Intermittent hoarseness later became constant, and aphonia might be the end-result. Local laryngeal discomfort might be an early symptom, and he thought this might be due to the increased muscular effort necessary for voice production. The usual general investigations and examination were essential to exclude or demonstrate any extralaryngeal disease that might have a definite relationship to the local disease of the cords. Examination of the larynx with the mirror was usually enough to make the diagnosis, but this had occasionally to be supplemented by inspection with a direct laryngoscope. The final differential diagnosis was made by histological examination of the tissue.

He divided the treatment into two parts—to restore first the normal contour of the cords, and then the muscular balance in tone production. In early and small lesions, palliative measures such as absolute voice rest, inhalations, locally applied bland medication, and restriction of tobacco and alcohol might be sufficient. Often, however, it was necessary to scalp off the tumour mass, and he thought that direct laryngoscopy was the method of choice. Care must be taken not to remove or injure the deeper layers of the cord, as scar formation would result with impairment of function. He used the anterior commissure laryngoscope and the cup forceps of Jackson, and applied tincture of benzoin to the raw area after removal, as he found that this promoted healing. Absolute vocal rest must be maintained until complete healing had occurred, and vocal training should not begin until the cord is smooth.

There was no discussion after this paper, and Dr. Tucker showed a film in colour of the technique he employs in removing the tumours. He also showed a film of his technique in bronchoscopy.

Dr. V. L. PARMAR (Bombay) showed two films illustrating his technique in tonsillectomy with the diathermy knife under local anæsthesia.

SECTION OF DISEASES OF CHILDREN

AT a meeting of this section on July 22nd Dr. R. C. JEWESBURY took the chair when a discussion on

Obesity in Children

was opened by Dr. H. GARDINER-HILL (London). He said that obesity should be recognised and treated in the early stages, since in many cases which came up for treatment in adult life the commencement could be traced to childhood. There had recently been a change of outlook on the question, and nowadays parents were only too ready to accept a diagnosis of glandular deficiency. In his opinion the condition did not clear up at puberty, and though the patient learned to treat herself, amenorrhœa tended to occur. In considering causes the question was one of energy balance, and of the difference in the reaction of the fat child and the normal to excess. The so-called simple obesity was in reality not so straightforward in many cases. For example the fat baby whose mother had been obese during pregnancy was not necessarily a case of simple obesity. The same applied to fat children at school where the diet was excessive, since only a proportion became fat. In his experience 60 per cent. of cases of obesity had a family history of abnormalities in weight, also in hair growth and distribution. All these factors had led him to doubt the simple origin of most cases. In supposed cases of endocrine disturbance he found that many were wrongly diagnosed as Fröhlich's syndrome, whereas the genuine cases were often not very heavy; the same applied to the genuine cretin. In his opinion endocrine deficiency did not play much part in the production of obesity in childhood. He believed the condition to be inherent in the chromosomal constitution, with accompanying changes in appetite and temperament, causing variations from normal in the reaction to excess. He believed the fat child to have a defect on the anabolic side of his metabolism, where the error was in storage, and in this his view differed from the theory of luxus consumption, which stressed the katabolic defect. Many experiments had been carried out on the basal metabolic rate of these children and had shown no constant values. There was no definite evidence of defect of oxidative powers. He suggested that endocrine

glands might play a part in storage, but little was known of this side of metabolism, except that insulin administration might produce a result clinically resembling Fröhlich's syndrome. Sugar tolerance, which tended to be high in early cases, gradually became delayed in adult life, and sometimes went on to true glycosuria. With reference to water and salt metabolism, certain patients with obesity would rapidly lose 4–5 lb. on being put to bed, from no other cause than the excretion of water, while certain cases of Addison's disease could store water on being given sodium chloride.

Summing up, Dr. Gardiner-Hill said that usually the fat child was also overgrown and overdeveloped. When the intake became excessive the fat child increased weight, whereas the normal individual's weight remained stationary. The difference in the two reactions was probably inherent in the make-up of the individual. Although we were in the dark as to the mechanism, the defect was only in the reaction to excess, and he suggested the defect was on the anabolic side.

Dr. P. C. MALLAM (Oxford) questioned this last suggestion, since he did not feel that that theory explained why fat storage should be more affected than growth. He believed that obesity was not due to any one factor, such as changes in insulin, pituitary, or adrenal secretion, but rather to a breakdown in the very elaborate scheme, in which both anabolism and katabolism were affected. The condition represented the effects of an environmental strain placed upon a weight-controlling mechanism which was hereditarily inferior, and thus this mechanism was in his opinion more likely to break down at a time such as puberty. Evidence of disturbance might appear in other members of the same family. As regards treatment, he urged very strongly that no fat child should be left without help. The psychological side must be remembered, and the change in outlook of a child after successful treatment was very encouraging. The coöperation of the parents might be difficult to obtain, and on the whole these children did better at boarding-school. Treatment should be primarily dietetic, and as in diabetes it should first be found whether physiological rest would be sufficient to control the condition. He believed in reducing fluids, and in giving the greatest quantity early in the day. He had used Novurit suppositories and Salyrgan with success. Salt could be replaced by one of the substitutes now on the market. He had found these children tended to be rapid eaters, and believed that in their hurry they were liable to overshoot the normal point of satiation. Glandular therapy should be withheld until other methods had been tried; while both thyroid and prolan were powerful in cases of obesity, it was difficult to decide whether the delayed puberty sometimes present was a cause or a result of obesity. If the overweight growing child could, with diet and exercises, be kept at a steady weight for a year, he thought it safe to say that a reduction of weight had been achieved.

Dr. R. W. B. ELLIS (London) referred to the 50 cases of obesity studied by Dr. K. H. Tallerman and himself at the London Hospital. They had classified these cases as those due to exogenous causes, such as excessive food and lack of exercise, and those depending on endogenous or personal factors. He believed that lack of exercise was a very unusual cause, since children who were kept in bed for very long periods were seldom overweight. The group studied had included only those children beween the ages of 5 and 14 whose weight was not less than 25 per cent. above the average for both their height and age. The children were investigated with reference to distribution of fat, genital development, condition of the fundi and visual fields, and radiography of the sella turcica. The basal metabolic rate was not studied. Although many of the children had been referred to hospital as cases of Fröhlich's syndrome he found no evidence of this condition in any. He showed slides illustrating various points, such as the distribution of fat, which might give a false impression of breast development in boys. Further, the diagnosis of hypogenitalism was often made when the true condition was merely one of retraction of the scrotum and penis in the surrounding fat. There was a family history of obesity in 60 per cent. of his cases. Although the condition might be due to good appetite and diet, he showed slides of 2 girls with obesity where the diet was apparently normal and the parents were both over six feet tall and heavy; they also proved to be first cousins. He had made a composite graph of 19 cases classed as primarily exogenous and compared this with a similar graph of 19 endogenous cases; these illustrated a definite increase in tolerance in the endogenous group. He described the case of a girl of 12, closely resembling Cushing's syndrome, who was plethoric, with striæ and hirsutes, and who had not menstruated at the age of 15. At laparotomy no adrenal tumour could be found. As to treatment, Dr. Ellis was not convinced about the supposed disadvantages of obesity in childhood. His series of patients had for the most part been healthy, active, and happy. Several who had been followed after puberty had been found to be no more than comfortably plump. He would reserve treatment for those cases with symptoms such as dyspnœa, genu valgum, and leg pains. Other cases he would leave and reconsider at puberty. Where treatment was adopted it should consist of drill and games, together with dieting. Gland therapy was much abused; he believed that whilst thyroid was useful in certain cases it should never be pushed; pituitary preparations were very seldom of any value.

The CHAIRMAN, in throwing open the discussion, agreed with Dr. Ellis that the fat child was often overactive, jovial, and good at swimming. He would postpone endocrine therapy till past puberty.

Prof. E. P. POULTON (London) referred to his work on metabolism in relation to body-weight and height. He believed that the change in his curves which occurred at the age of one year was due to the fact that the baby began to take exercise and to use up the fat stored in infancy. He wondered whether the so-called exudative diathesis was not due to water-retention and whether thyroid might not be useful in these cases to cause diuresis.—Dr. S. P. HUGGINS (High Wycombe) had noted that obesity often followed acute infection in childhood. As medical officer to a large girls' school he had been struck by the fact that those who had been fat at puberty were usually normal at 21.—Dr. P. M. F. BISHOP (London) pointed out that no pituitary preparation was of any value when given by the mouth and, furthermore, pituitary was useless in obesity.

Dr. GARDINER-HILL, in reply, agreed with Dr. Bishop that pituitary was useless and he also thought that thyroid should be used only under very careful control. In three cases of hyperinsulinism that he had seen the patients had not been fat but possibly associated malignant disease had been responsible for this. He maintained that obesity should be treated when it made its appearance.

In opening a discussion on indications for and value of

Blood Transfusion in Childhood

Mr. DENIS BROWNE (London) said that he held very much the same views as he had expressed in a paper some five years ago. He believed that blood transfusion had rapidly reached a stage where it seemed destined to remain for some time, though valuable innovations, such as the prolonged drip method, had increased its efficiency. He felt very strongly that blood transfusion, although given more frequently than in the past, was still not given nearly often enough, and that the profession had no reason to congratulate itself upon this state of affairs, since lives were lost which might be saved by more extensive use of so valuable a measure. He could imagine a Utopia where blood transfusion could be obtained rapidly in any part of the country. This would necessitate not only a blood donor service, but also an organisation with specially trained men who were constantly repeating the operation and who were therefore expert. Every individual ought to know his own blood group, and he believed that such information should be added to Army identification discs. He believed that the technical problems of transfusion should be studied and the best method standardised. The idea that every man would get the best result by using the method to which he was accustomed was based upon the fallacy that all progress springs from variation, and therefore that variations should be encouraged. In his Utopia the present position of instrument manufacturers would be altered. He considered it one of the profession's primary curses that instruments were made by people who did not understand their use, and used by people who did not understand their making. He believed that money should be available for research into instruments and splints.

Referring to technique, Mr. Browne emphasised certain points of difference in the transfusion of children as opposed to adults. Direct transfusion was unsuitable for several reasons, the most important being that it needed a rate of flow far too great for small children. The whole transfusion should take the same time, whether it were given to a child or an adult and he found that he tended to become more and more slow. He advised giving 10 c.cm. per lb. and taking ½ to ¾ hour in administration. He considered it essential to use dry sterile crystals of citrate, put up in ampoules of 2 grammes; these should be dissolved in water which had been specially prepared for intravenous use. By avoiding ordinary "distilled water" and stale solutions, reactions could be practically eliminated. Gravity was never sufficient as a propelling force and he considered air pressure had the disadvantage of being explosive, liable either to drench the operator and lose the blood, or, if a temporary blockage was suddenly overcome, a dangerous amount might be shot into the circulation. He believed that a screw piston was the most satisfactory. He showed a special needle designed for withdrawing blood, which was provided with a glass mount that enabled the operator to know directly the vein had been entered.

Dr. A. KEKWICK (London) then read a paper, written jointly with Dr. H. L. MARRIOTT, on the

DRIP TRANSFUSION METHOD

elaborated at the Middlesex Hospital. He described the main principles and modifications required in dealing with children. In considering the dose, since the adult had roughly 10 pints of blood, it followed that a transfusion of 1 pint could raise the hæmoglobin by only 10 per cent. Dosage should be decided by the degree of anæmia and therefore a gallon might be required to raise the hæmoglobin sufficiently. Since this volume would be dangerous if given rapidly, the rate must be slow enough to allow of adjustment. Experimentally it had been shown that 1 pint should be given in four hours, though this rate should be reduced in cardiovascular disease. Where the patient was bleeding the equivalent to the rate of loss should be added to the pint given in four hours. In 14 cases of blood transfusion given to children between the ages of 15 days and 15 years they had found that, as in an adult, one-tenth of the blood volume should be given to produce a 10 per cent. rise in hæmoglobin. Working on this assumption they had found that their predicted rise in hæmoglobin from any given transfusion had been very closely approximate to the actual rise. A 10 per cent. hæmoglobin rise four-hourly worked out at 2 drops per minute; in practice 5 drops per minute had been given with no ill-effect.

Dr. Kekwick and Dr. Marriott believed that blood transfusions should be used solely for the relief of anæmic states and considered it dangerous in patients with normal hæmoglobin values.

Mr. R. H. ROSE INNES (Oxford) agreed with Mr. Browne that the blood group should be included on Army identification discs and also that blood transfusion was not sufficiently used. The donor service in Oxford was good, but not large enough, and he would like to see young women of leisure replacing working men as donors. He sometimes obtained blood from plethoric patients in the medical wards. Referring to technique, he used the saphenous vein in front of the internal malleolus and immobilised the baby on a padded cross. Since adult blood was of different quality, great care should be used in its transfusion into a baby. In cases such as pneumococcal peritonitis, general peritonitis, and osteomyelitis where the defence mechanism was breaking down, he preceded his transfusion with a venesection. He believed in giving the blood very slowly and keeping the leg as well as the blood warm.—The CHAIRMAN emphasised the difficulty in getting blood into an infant and urged that the future training of medical students should aim at producing experts in this branch.—Dr. C. F. HARRIS (London) considered that enough attention had not been given to the indications for blood transfusion which, in his opinion, were not clear. He believed that there was a danger that transfusion might be given too often. Although theoretically adult blood might be useful in various conditions, he was not at all sure it was necessarily of value in practice. He also thought that blood should always be tested directly for compatibility and that reliance should not be placed on grouping.

PRINCESS ELIZABETH OF YORK HOSPITAL.—On July 23rd the Duchess of York visited Banstead to lay the foundation-stone of the new buildings which this hospital, at present in Shadwell, is erecting there. Rain made the outdoor ceremony impossible, and the Duchess placed a model foundation-stone on a model of the building, the ceremony being performed in the house which is to provide quarters for the medical and nursing staffs and which is the gift of Mr. A. Stanley Garton. At the same time a real foundation-stone was laid in position on the building site. As a country hospital for town children this will be the first of its kind in Great Britain; it stands in large grounds which are the gift of Mr. Garton and Mr. E. W. Meyerstein. The new buildings will be completed in about two years, but it is hoped to open at least half of it next year with accommodation for nurses, and operating theatres, if £60,000 can be collected before Christmas. There will be accommodation for 185 beds and ultimately for 300.

REVIEWS AND NOTICES OF BOOKS

A Guide to Mental Testing

By RAYMOND B. CATTELL, M.A., B.Sc., Ph.D., Director of the School Psychological Service and Clinic, Leicester Education Authority. University of London Press Ltd. 1936. Pp. 312. 10*s*. 6*d*.

IN a foreword to this book, Dr. William Moodie, the director of the London Child Guidance Clinic, aptly describes its place and function. "Here," he says, "for the first time is collected under one cover reliable information on all aspects of the subject." It is, in fact, a pioneer work and very efficiently achieves its purpose. In the first instance, mental testing meant intelligence testing and still, in practice, is often little more, but this book gives a summary of existing methods of testing, not only of intelligence and attainments, but also of special aptitudes, interests, emotional make-up, temperament, and character. The reliability of such tests decreases as we advance along this scale, but the reader learns at least the stage reached in regard to each department of the subject. Inevitably at some places the book becomes a catalogue, for it is impossible to give all tests in detail, but each section contains a very full discussion of the rationale of the methods of testing and of the present position of research in the field concerned. The book ends with a chapter on the selection of tests for specific purposes and their interpretation, probably the most valuable chapter in the book to the examiner.

To many medical officers experienced in the use of verbal and performance tests for the detection of the subnormal, the book will be a revelation of the wide field now covered by testers and the additional light that may be thrown on their subjects by the use of the methods suggested. They may, perhaps, be inclined to resent Dr. Cattell's allusions to the continued popularity of Binet tests as a tribute to the "conservatism rather than the scientific conscience" of those using them. There is, of course, much advantage in the use of the same tests by an individual examiner dealing with one particular type of subject, but there is also a danger of getting into a groove in testing, and readers of this book will be guarded from this danger if they avail themselves intelligently of the flood of material put before them by Dr. Cattell. They will realise more clearly that the idiosyncrasies of individual examinees demand the application of individual methods of testing to elicit special aptitudes or interest, or special traits of character that will be of value in assessment.

Dr. Cattell is extremely interesting on the question of proper interpretation of the meaning of the results of any test in themselves, and in their relation to other tests. Tests of temperament and character are, of course, still on trial and the chapters on those subjects are mainly useful for the indications they give of the lines along which research is proceeding; but to a medical man the questionnaire relating to symptoms of nervous abnormalities appears to be composed largely of leading questions.

The author, while an enthusiast for his subject, does not attempt to conceal its transitional state. Psychology, he admits, is greatly beset by growing pains and psychologists are often wildly at sea in their conception of what they are testing. He knows that his book will soon require revision but that does not affect its present value.

Legal Problems in Medical Practice

By D. HARCOURT KITCHIN, Barrister-at-Law. London: Edward Arnold and Co. 1936. Pp. 231. 10*s*. 6*d*.

Mr. Harcourt Kitchin has happily gathered from various sources (chiefly from his articles in the *British Medical Journal*) useful advice and information on the law as it affects the medical practitioner, from the pitfalls of partnership to the prospects of civil liability for surgeons, physicians, and hospitals. On this last topic his excellent account of Marshall *v*. Lindsey County Council, accurate when written, already needs adjustment in view of the judgment delivered by Lord Hailsham last month. The science of law, like that of medicine, does not stand still. Mr. Kitchin writes cheerfully and wisely, and the critical reviewer will find little to challenge. One trivial point may be mentioned. It is stated on p. 115 that a certain Elizabethan statute against perjury was made permanent by a Statute Law Revision Act passed in 1863. The statute had surely been made permanent in the time of James I.; the 1863 Act did no more than tidy away some surviving traces of the temporary duration. The matter, however, is of no great moment to medical readers. If Mr. Kitchin's little book gives them the opportunity to learn about the latest legal decisions, it also gives them sound advice which will help them in the conduct, and, still better, in the avoidance, of litigation—namely, the advice to join one of the medical defence societies. Admirable as is the help which we all receive on all sorts of matters from the family solicitor who is the general practitioner of the law, the legal problems of medical practice are an occasion for recourse to specialists such as the expert advisers whom the defence societies employ. Mr. Kitchin modestly says he has tried to indicate to doctors something of the way in which the lawyer looks at their problems. Perhaps, he adds, someone else will explain medical science and the medical outlook to lawyers. It is a task for which he himself has many qualifications.

Applications pratiques de la transfusion sanguine

Par ROGER MOLINE, Interne des Hôpitaux de Paris. Paris: J. B. Baillière et Fils. 1936. Pp. 60. Fr.10.

THIS small monograph is of interest to the English reader mainly as an exposition of the French practice in regard to blood transfusion; hardly any reference is made to published work outside that country. The indications, contra-indications, and technique of transfusion are discussed in a lucid and rather dogmatic way. The chief point of difference from the practice in this country is that direct transfusion of blood, without the addition of an anti-coagulant, appears to be general, and indirect transfusion of citrated blood is merely mentioned as a possible but unusual method. The arms of the donor and recipient are placed side by side and the needles in their veins connected by rubber tubing in the middle of which is a Jubé or Tzanck syringe. No reasons are given in support of direct transfusion, but presumably it is favoured because of a preference for pure rather than citrated blood. This preference used to exist in this country and America when reactions after transfusion were thought to be due

to the citrate. Recognition that it is not the citrate but the improperly distilled water used in the preparation of the citrate solution that causes reactions has dispelled the prejudice against citrated blood, which is much more convenient to use. The pioneer English work of McIntosh, Fildes, and Dearden (THE LANCET, 1912, i., 637) and the later work of several American investigators, notably Seibert, Hunt, Rademaker, and Banks, on dead organisms in the water of intravenous solutions as the cause of pyrexial reactions and rigors is pertinent to this point.

Apart from disadvantages associated with inconvenience, direct transfusion of uncitrated blood cannot be long prolonged because of difficulty from coagulation of blood within the apparatus, and because the donor cannot be expected to wait for hours—in consequence the transfusion may be too hurried, particularly in the case of child recipients, with dangerous results. Direct transfusion is more alarming to the donor, and it is not surprising that M. Moline lays stress upon the importance of the moral qualities of courage and cheerfulness in donors and prefers professional ones to relatives. The faith here expressed in blood transfusion in non-anæmic states—for its immunising, antitoxic, diuretic, or hormonic properties—is greater than that generally found in this country. In regard to the anæmic states, the rational conception that the dose of blood administered shall be regulated by hæmoglobin determinations finds no place, and directions as to dosage are set forth in vague terms or arbitrary quantities. We do not imagine that the French methods as here described will impress British workers.

Allergy of the Nose and Paranasal Sinuses

By FRENCH K. HANSEL, M.D., M.S., Assistant Professor of Clinical Otolaryngology, Washington University School of Medicine. London: Henry Kimpton. 1936. Pp. 820. 42*s*.

DURING recent years the subject of allergy has attracted a great deal of attention and much has been written about it. Of such contributions this volume must be among the largest; but its subject matter is by no means limited by its title, for it includes many lengthy discussions of conditions which, though allergic, are not rhinological; and of others which, though rhinological, are not allergic. The author's method is to describe the observations and experiments of many workers in these fields and to provide at the end of each chapter a full bibliography. Unfortunately he seldom gives his own opinion or even a summary of the conclusions accepted by authorities on the subject.

The earlier chapters deal with the physiology of the nose and sinuses, the vasomotor reactions of the mucosa, the action of the cilia, and the effect of drugs and physical agents on ciliary action, and the biochemistry, bacteriology, and cellular reactions of the tissues. Then follows a detailed examination of anaphylaxis and allergy in general with the methods of testing, and of the nasal manifestations in particular, with a chapter on roentgenographic examination of the sinuses, from which it appears that this method is of little assistance in distinguishing allergic from infective processes. The diagnosis of nasal allergy is made chiefly on the history of other manifestations and on the family history, on the appearance of pallor, œdema, or polyposis of the nasal mucous membrane, on the presence of eosinophils in the secretions, and on positive skin reactions. The author's opinion is that hyperplastic ethmoiditis, chronic œdema, and polyposis of the sinuses must always be considered as allergic until proved otherwise; he found that 44 per cent. of patients suffering from chronic nasal complaints had nasal allergy, but he quotes H. L. Baum who found the incidence to be 27·3 per cent. There is next a section of nine chapters devoted to other and extranasal manifestations of allergy, and finally the important subject of treatment is considered.

The results of treatment are said to depend greatly upon intelligent coöperation on the part of the patient, and upon a thorough understanding of the methods of diagnosis and treatment on the part of the physician. The subject of hay-fever is discussed very thoroughly. The methods of preparation and standardisation of pollen preparations are described in detail, together with every possible method of administration. Non-specific treatment is considered more briefly, and the application of the galvanocautery to hypersensitive areas is not mentioned, although many observers have found it a useful and convenient method. Local ionisation is the only non-specific treatment discussed at length. Its use was reported by C. Baber in *The Laryngoscope* as long ago as 1898, and many references are given to subsequent workers who have used it. The author's conclusion is that there is a great difference of opinion as to the results obtained.

The book is a long one and might have been improved by the omission of various matters not directly concerned with allergy; but it will be useful as a work of reference, since it contains an immense amount of detail and is provided with a good index and a paged table of contents.

Practical Photo-Micrography

Third edition. By J. E. BARNARD, F.R.S., F.Inst.P., F.R.M.S., Director of Department of Applied Optics, National Institute for Medical Research; and FRANK V. WELCH, F.R.M.S. London: Edward Arnold and Co. 1936. Pp. 352. 21*s*.

IN the eleven years which have elapsed since the second edition of this admirable text-book was published, there have been many advances in the art of photomicrography and in the development of apparatus. The book has been very completely revised to bring it up to date, and parts of it have been rewritten. The section on the photomicrography of opaque objects has been extensively altered, and that on photography by ultra-violet light has been enlarged into a whole chapter. Two new sections have been added dealing with infra-red photography and cinematography. These changes have greatly improved the work. As it now stands there is practically no photomicrographic process which is not dealt with.

The authors deserve congratulation on having kept the text on a useful and practical plane and avoided technical excursions into the physics of the subject. They rightly point out that the elaboration of apparatus cannot replace technical skill, and they have wisely concerned themselves more with methods and principles than with the mere description of new appliances. In its present form the book can be read with advantage by anyone familiar with elementary microscopy, and the directions for the setting up of apparatus and the actual taking of photographs are extremely lucid and easy to follow. The illustrations throughout are excellent, and the last chapter on some progressive examples contains some really beautiful work.

British Masters of Medicine

Edited by Sir D'ARCY POWER, K.B.E., F.R.C.S., F.S.A., Consulting Surgeon and Archivist to St. Bartholomew's Hospital. London: The Medical Press and Circular. 1936. Pp. 242. 7*s.* 6*d.*

THIS volume contains a series of articles written by various hands giving some account of a number of the men who have earned the title of "master" since the time of William Harvey. His name stands first in the list, and the last is that of Ernest Starling. The editor contributes a charming introduction in which he rightly claims that to some extent the series constitutes a history of medical progress in the last three centuries. Most of the names which appear in the list of 24 masters will be familiar to the medical reader, but the record of their work is retold in such a fashion that the story is fresh and attractive. Of the less familiar names the accounts are no less attractive, and will have the additional charm of novelty. For example, Prof. J. A. Gunn writes of Sir John Floyer, a physician of the latter half of the seventeenth century and the first 30 years of the eighteenth. Floyer has earned his place among the masters by his researches on the pulse and the mechanism of respiration, and though the materials for his biography are slender Prof. Gunn has contrived to write an account of this almost forgotten master which we think establishes his claim to the title. The portrait of Floyer which precedes the biography was discovered almost by chance in a book in the Bodleian on a loose sheet of paper, and is the only representation of him which we now possess. Another name which is not so familiar as it should be is that of Hugh Owen Thomas. Thomas's splint is indeed known to all doctors, but there are few who could tell anything of the man. The story here given enables us to recognise his force and originality. The little biography of Sir William Turner is an attractive piece of writing, but Turner though both a good anatomist and an important administrator is not really in the category of masters of medicine.

Muscular Exercise

By M. GRACE EGGLETON, M.R.C.S., L.R.C.P., M.Sc., Assistant in the Department of Physiology, University of Edinburgh. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1936. Pp. 298. 10*s.* 6*d.*

UNLIKE many books on medical and physiological subjects which are written partly for the lay public, this one presents sound information in an interesting way, and will be appreciated equally by general and professional readers. Dr. Eggleton happily applies laboratory findings to the everyday actions of life, and draws upon athletic, factory, and sedentary occupations for examples. The whole physiology of natural activity is broadly included: changes in breathing, circulation, and body-temperature; the alimentary supply to muscles, their nervous and hormone control, the regulation of acidity in the body, and the analysis of fatigue. The book answers many questions which an intelligent layman or athlete might ask himself, and tends also to ask his doctor, sometimes to the latter's embarrassment. The answers given here are substantiated not only by laboratory results but by simple measurements of work and metabolism on the living subject. Climatic and working conditions are discussed, and throughout the physiological knowledge set out is brought into relation with everyday life. Graphs and diagrams illustrate the subject matter, and a short practical glossary of medical terms is included.

British Journal of Surgery

THE July issue (Vol. XXIV., No. 93) contains the following articles:—

Total Removal of a Lung, by R. MILNES WALKER (Wolverhampton). The record of a successful operation for severe one-sided bronchiectasis in a child of seven years. The results are tabulated of 44 cases of total pneumectomy in the literature.

Hydatid Disease of the Kidney, by R. CAMPBELL BEGG (Wellington, New Zealand). The life-history of the echinococcus is described in detail, together with its method of entering the kidney. Four cases are reported; previous records are reviewed and the indications for operation are discussed.

Congenital Dislocation of the Head of the Radius, by BRYAN MACFARLAND (Liverpool). Eleven cases are recorded, of which five required operation. The associated deformities of the upper ends of the radius and ulna are described, and the confusion that is apt to arise when injury is added.

Multiple Primary Epithelioma in Lymphatic Leukæmia, by R. V. PULVERTAFT (London). Xeroderma, in conjunction with leukæmic infiltration of the skin, was followed by malignant ulceration, this being possibly due in part to interference with the blood-supply to the skin.

Acute Ilio-Psoas Abscess, by R. E. NORRISH (London). In the case reported the abscess originated in a carcinoma of the cæcum that had perforated. The other possible sources of origin are discussed, and the spread of the pus is described.

Cleft Sternum: Case Report and Brief Commentary. by GLEN A. M. KNIGHT and GEORGE H. MORLEY (Aden), A congenital deformity, found in a young Arab, without either visceral complications or associated deformities.

Melanoma of the Rectum, by HAROLD H. LINDNER (San Francisco) and W. QUARRY WOOD (Edinburgh). The tumour was successfully removed by perineal excision. The origin of melanotic tumours in general is discussed, and that of melanomata of the rectum traced to the skin of the anal margin.

Radical Excision of Malignant Tumours of the Ethmoid-Maxillary Region, by W. H. GRAHAM JESSOP (London). A case is reported in which the patient has remained well for 12 years. The indications for the radical operation are discussed, together with its rationale and technique.

Spondylolisthesis, by JAMES A. JENKINS (New Zealand). The displacement was largely reduced by gradual weight extension applied to both ends of the trunk, combined with self-manipulation on the part of the patient. A graft was then inserted through the anterior aspects of the bodies of the two vertebræ approached by abdominal section.

The Clinical Manifestations of the Spread of Carcinoma of the Œsophagus Observed During Life, by JOHN E. G. MCGIBBON (Liverpool). In 29 of 100 cases there was evidence of spread of the growth outside the œsophagus. The average duration of symptoms was 5–7 months.

Intravenous Injection of Hypertonic Sodium Chloride Solution in the Treatment of Some Conditions of Low Blood Pressure, by JOAN B. WALKER (Leicester). Records are given of 53 cases. The treatment has been particularly successful in controlling the fall of pressure associated with spinal anæsthesia and in intestinal obstruction. The hypertonic solution is said to act by mobilising fluid from the paralysed limbs.

Some Observations on the Surgery of Trigeminal Neuralgia, by E. P. STIBBE (London). The two main findings are (1) of large sensory nerve-cells in the nerve close to the pons, allowing regeneration after section proximal to the Gasserian ganglion, and (2) that in monkeys functional division into pain and touch fibres occurs in the sensory root, allowing division of one lot of fibres without the other.

Reconstruction of the Common Bile-duct, by J. HAROLD COUCH (Toronto). A description of repair in a case in

which the right and left hepatic ducts had been severed at their exit from the liver. A fourth-way tube was introduced and successful function eventually restored.

Continuous Intravenous Infusion, by P. R. ALLISON (Leeds). A simple and efficient apparatus is described by which the rate and temperature of delivery of the fluid is controlled.

Two Cases of Ganglia in the Sheath of the Peroneal Nerve, by V. H. ELLIS (London). In both cases the complaint was of pain in the foot and of foot-drop. A cystic swelling was found in each case over the head of the fibula, and its removal was followed by recovery of the nerve.

Cystic Disease in Supernumerary Breasts, by A. J. NORONHA (Poona). The author considers that this case of bilateral cystic disease in isolated parts of breast tissue supports the theory of causation of the disease by stagnating secretions.

The Significance of Lumbosacral Transitional Vertebræ, by C. A. G. MITCHELL (Caithness). A distinction is made between "sacralisation" and "lumbarisation" of vertebræ; the cause and reality of the symptoms is discussed, and conservative and operative forms of treatment are described with their indications.

Three Cases of Fracture Resulting from Electric Shock, by H. JACKSON BURROWS (London). The upper end of the humerus was involved in all three cases, and considerable persistent disability resulted. The shock in each case was caused by an alternating current of 230–240 volts.

Osteochondritis Deformans Coxæ Juvenilis or Perthe's Disease: the Results of Treatment by Traction in Recumbency, by ARTHUR L. EYRE-BROOK (London). The traumatic and infective theories of origin are reviewed. In 41 cases studied, permanent advantage has followed the traction method in children under seven years, and in early cases in older children. The age of the child, the duration of the disease, the shape of the femoral head, and the efficiency of the treatment all influence the prognosis.

Observation on the Experimental Production of Peptic Ulcers, by P. P. T. WU and H. GORDON THOMPSON (Shanghai). The experiments show that the presence of heterotopic gastric tissue is an uncertain cause of ulceration in the small intestine. The neutralising effects of the intestinal contents, and the possibilities of individual susceptibility and of hormonic activity have all to be taken into consideration.

The issue also contains short reports on rare cases of special interest.

NEW INVENTIONS

A MIRROR FOR VIEWING SURGICAL OPERATIONS

THERE are many occasions when the essential core of a major operation cannot be seen by students or surgical travellers. The detail of work upon the pelvic floor, prostate, junction of cystic and common duct, of lung and hilum, and upon the palates of tiny infants can only be enjoyed by one or two fortunate persons at the side of the surgeon or his assistant. The other observers, unless relentless in neck-craning, elbow-percolating, or tip-toeing, often miss the very part of the operation they most wish to see.

The reflector in use to show the middle lobe of the prostate.

The reflecting mirror about to be described enables at least nine persons to sit at some distance from the operating table and to view all details with amazing clarity. The instrument has the advantage of being a simple device which can be fixed to any standard type of scialytic lighting; it can be swung round to suit any angle of the operating theatre without moving the overhead focus; it does not obstruct any of the candle-power or interfere with the surgeon's head and, lastly, by its central aloofness it is not another apparatus to clutter up the theatre floor. Furthermore, the fitting is an inexpensive one. Its only disadvantage —the price of its simplicity—is the "inverted" image it gives. Such a disadvantage has not detracted from the wide use of the laryngeal mirror, and cerebral adjustment can be made as easily for this application of the same principle.

The instrument consists of a 12-inch plane mirror slung by two shoulders to a frame whose centre is supported by a swivel-pin. This pin passes through a hole drilled in the middle of the glass floor of a scialytic light. By the shoulders the mirror can be tilted up and down to any angle, and by the central swivel-pin it can be turned round from side to side. Thus a person standing at any point in the theatre may have a view of the operating field presented to him, but for practical purposes the mirror is adjusted by a nurse when the top light is focused, so that 9–12 students in the centre of the ground-floor gallery can secure the best view. On the rare occasions when there are more than a dozen onlookers these must be content with the usual constricted view of the opening and closing of abdominal wounds. Slight reweighting and raising of the scialytic light are desirable minor adjustments to avoid the contact with the surgeon's head that the normal light will give if allowed to hang too low.

This mirror is the direct product of an Institute of British Surgical Technicians lecture at Toynbee Hall, where it was urged that some kind of mechanism should be made to overcome the difficulty of "learning how to operate." Before publishing this account a search had been made in the principal surgical journals for similar devices in order to avoid repetition. It has just been brought to my notice that a movable mirror that has been used by Sir Charles Gordon-Watson was described last year in the *St. Bartholomew's Hospital Journal* (1935, xlii., 141). This mirror is attached to the circumference of the scialytic light, but its restricted angular range is a very clear one.

To Mr. C. A. Stone of Down Bros., and of Mr. Hopkins of Technical Light Ltd., this instrument owes its construction, and I would like to thank them and Messrs. Down Bros. for their excellent product and for the care and courtesy that were the features of its installation. Thanks are also due to my surgical colleagues at the West London Hospital for permitting the use of a reflecting mirror during the past four months.

A. SIMPSON-SMITH, M.Chir. Camb., F.R.C.S. Eng.

THE LANCET

LONDON: SATURDAY, AUGUST 15, 1936

THE NATION'S WATER

GOVERNMENT after government has managed to ignore the water problem of this country. Investigating bodies have sat and reported at intervals, and their recommendations have been almost wholly neglected. The drought of 1933–34, however, provided an exceptional stimulus, and a joint committee of both Houses was appointed to sit "to consider and report on measures for the better conservation and organisation of water resources and supplies in England and Wales." This committee—or rather, their successors in the present session—have just reported.[1] In order to obtain guidance for their complex task they wisely asked the Minister of Health to inform them of the principal difficulties on which their recommendations would be of special value, and to discuss with them how far the conflict of interests between the Ministry of Health and the Ministry of Agriculture, and between those Ministries and the other parties interested, could be eliminated. The Minister told them that the considered opinion of an impartial tribunal was particularly needed on certain proposals which did not affect the Ministry of Health and on which the various parties could hardly be expected to agree. These concerned, broadly, the procedure for obtaining powers and the assessment of compensation water. The committee therefore confined their inquiry almost entirely to the Minister's memorandum. They declined to revise the Waterworks Code or to consider the amendments which the Ministry of Health desire to make to the Public Health Acts; they held that a detailed revision of the existing law affecting standard clauses should be deferred until it can be dealt with in some such way as that used to codify the Local Government Acts.

In dealing with the Minister's proposals for obtaining powers to schedule by order areas in which he thinks the conservation of water-supplies will be in the public interest, the committee appreciate that scheduling may sometimes be necessary to ensure an adequate supply of water to the public. They point out, however, that water-undertakers suffer from many restrictions which do not affect other property owners, and they recommend that property-owners who desire to sink wells below a certain depth or extract more than a certain quantity of water from them should be treated in the same way as water-undertakers, who have to come to Parliament for powers and are usually obliged to compensate persons whose supply they deplete. Most of the witnesses were opposed to the suggestion that the Ministry of Health should have the sole power to make orders. The committee agree, and criticise the Ministry for not sufficiently considering opposing points of view before submitting its proposals to the committee. They recommend that the Minister should not be given power to make orders, even if unopposed, without Parliamentary control, and they do not consider that any new water legislation should be made by order, but recommend the continuance of procedure by Private Bill except for schemes which only affect the distribution of water. For this reason they do not agree that a central water authority should be set up, for if the Private Bill procedure were retained it could not have the requisite powers. They deem it essential, however, that a Central Advisory Water Board should be established, containing representatives of the various Ministries, Catchment and Fishery Boards, water-undertakers, and mill and other riparian owners. The Board would receive reports from the nine existing regional advisory committees, possibly augmented by three or four more, and collect and marshal all the available statistical data and information concerning the country's water resources and requirements. It would advise the appropriate Minister on the initiation of any necessary schemes, and be consulted on impending legislation. It would submit reports to all Select Committees considering Bills affecting water-supply, and issue an annual report, to be laid before both Houses. The regional committees are at present voluntary bodies; they should, the committee think, be made into statutory committees and represent other interests besides those of the water-undertakers and the Minister of Health, as at present.

In considering the problem of compensation water, the committee criticise the Ministry for not entering into more detailed negotiations with the representatives of fisheries, mill-owners, and other riparian and land-owners, besides those of the water-undertakers. They would not allow the Minister to revise existing awards, but would give this power only to Parliament. The Ministry propose a formula for assessing water, but the committee are unable to recommend the use of any formula at all, for the merits of each case differ so much. The unsatisfactory awards of the past have, they consider, been primarily due to the inadequacy of statistical data; they are glad to note that an inland water survey is to be carried out, and they also think that the Catchment Boards should have the duty of gauging the rivers not only in their lower reaches but also in their tributaries and upper reaches, at the expense of the Minister of Health. They recommend that compensation water should be assessed on the merits of each case, taking into account the character and flow of the stream impounded for water-supply purposes, the extent to which it is used for industries, fisheries, and so on, the probability of future industrial development, the protection of the rights of land-owners and the minimum proportion of the flow below which compensation ought not to be fixed, in the interests both of public health and riparian owners.

[1] H.M. Stationery Office. 1936. Pp. 13. 3*d*.

THE ÆTIOLOGY OF WHOOPING-COUGH

THIRTY years have passed since J. BORDET and O. GENGOU published in the *Annales de l'Institut Pasteur* (1906) an account of the bacillus with which their names are identified, and even now there is no universal agreement as to whether the bacillus is the sole cause of whooping-cough or whether the primary agent is a filtrable virus and the bacillus an associated invader. Prof. BORDET claimed recently (see THE LANCET, August 1st, p. 274) that the value of specific vaccine therapy, when given early in the disease to patients whose condition was not complicated by severe secondary infections, is now very generally accepted, and Prof. TH. MADSEN supported this contention on behalf of Danish clinicians.

On the value of vaccine prophylaxis there is a considerable measure of agreement. There are still some sceptics, however, to be found in most countries, not only about the value of vaccines, but about the fundamental problem of causation. Thus, A. R. RICH and his associates,[1] while admitting the importance of the rôle played by the bacillus, consider that certain facts remain to be explained before it can unreservedly be regarded as solely responsible for the disease. They point to the unsatisfactory results of animal inoculation with pure cultures of the bacillus; in most experiments the introduction of the bacilli into the respiratory tract has been either completely negative or inconclusive. These workers consider that "while it is altogether likely" that the paroxysmal cough is due to the irritative action of the bacteria localised in the cilia of the respiratory tract leading to the production of plugs of tenacious mucus, this localisation in the cilia is not specific for the Bordet-Gengou bacillus. They instance a similar localisation of *B. influenzæ* and of the *Bact. bronchisepticum* in canine distemper; the production of a paroxysmal cough follows human infections with these organisms. The influenza bacillus, they say, can commonly be isolated, often in pure culture, from the trachea and bronchi in fatal cases of whooping-cough, and whereas the Bordet-Gengou bacillus can rarely be recovered from patients in the later stages of the disease, influenza bacilli are frequently present in abundance. Again, interstitial mononuclear cell infiltration of the bronchial wall, which occurs characteristically in whooping-cough, is found in connexion with virus diseases, such as influenza and measles, which affect the respiratory tract, and this infiltration is readily produced experimentally by filtrable viruses alone. On the other hand, the same lesion is encountered in subacute and chronic pulmonary infections of bacterial causation regardless of the ætiology.

To test the attractive hypothesis that whooping-cough, like canine distemper, hog cholera, and swine influenza, might also be a virus-bacterial disease RICH and his co-workers endeavoured to produce whooping-cough in chimpanzees, animals very susceptible to human infectious diseases. By oral inoculation of the apes with unfiltered tracheal exudate from human pertussis they were able to produce a condition which they describe as similar to whooping-cough in all respects, including lymphocytosis and positive complement fixation. At the height of the cough Bordet-Gengou bacilli were recovered on cough-plates. Since inoculation of apes with pure cultures of the bacillus produced a similar condition, the authors conclude that the characteristic clinical features of the disease can be brought about by the bacilli acting alone. When apes were inoculated with bacteriologically sterile blood and filtered respiratory secretions, obtained from each of four early cases of whooping-cough, there resulted an upper respiratory catarrh without cough, and further, the one attempt made to transfer this "agent" from one ape to another by means of a bacteriologically sterile filtrate of the naso-pharyngeal secretions was successful. The nature and significance of the agent which caused the catarrhal condition remains undetermined. The authors do not consider that their limited data permit of the conclusion that it is a specific filtrable virus that acts by increasing the susceptibility to infection with the Bordet-Gengou bacillus, as the filtrable virus is held to act in swine influenza or canine distemper. Nor can they state with certainty that the agent in question was not the virus of the common cold. Further experimental work is, as they say, necessary to determine whether this filtrable agent is demonstrable with regularity in the early stages of whooping-cough, and, if so, whether it acts by enhancing susceptibility to the Bordet-Gengou bacillus. RICH and his colleagues agree that, if the favourable results obtained by SAUER in vaccine prophylaxis prove to be the general experience, one of the major objections to the view that the Bordet-Gengou bacillus is the sole cause of whooping-cough will be removed.

[1] Rich, A. R., et al.: Bull. Johns Hopkins Hosp., April, 1936, p. 286.

A CLINIC FOR DELINQUENTS

THE publicity given to the work of the Institute for the Scientific Treatment of Delinquency from its inception has evidently been effective since, according to the report for 1935, the increase in the number of new cases referred for examination, a procedure which began in the autumn of 1934, has been well maintained; 71 cases were dealt with in that year and 116 in 1935. At the end of 1935 there were 19 additional cases on the waiting-list and the financial resources of the clinic are now being seriously strained; delinquents deemed to be curable will have to be turned away if the funds available are not materially augmented. During 1935 there was also a great increase in the demands for advice by relatives, probation officers, and others concerned with delinquents not brought to the clinic for various reasons: some were unwilling to come; some lived too far away and had no money; some were in prison. The advice sought is the more urgently needed when the chief source of trouble cannot be directly tackled. It concerns such matters as how best to

handle a delinquent who is proving an embarrassment to his relatives or friends; the desirability or possibility of treating him at the clinic; or the provision of information about other clinics, homes, and hospitals where treatment can be obtained, especially where circumstances or mental condition make it undesirable or impossible for the delinquent to remain at home. Nearly all the London police-courts and six provincial police-courts have referred cases to the clinic; no fee is asked on behalf of such delinquents, in order that none may be deprived of help through inability to pay, but several magistrates have expressed their appreciation of the assistance given by making donations from the poor-box. Of the 71 cases seen in 1934, 35 were sent by the courts, and in 1935 no less than 75 of the 116 cases came from this source. Some half of these police cases were sent on remand before conviction, and the others were brought by probation officers after conviction, either immediately after being bound over on probation or at some later date owing to the emergence of mental symptoms which had escaped notice at the time of conviction.

This increase in court cases is attributed directly to the educational campaign fostered by the Institute. The lectures and seminars given to probation officers, the personal interviews with magistrates to explain the nature of the work done and the type of case seen, have evidently not only increased the numbers but have also improved the selection of the cases referred; thus nearly twice as many cases of theft were referred to the clinic in 1935 as in 1934 and the proportion of these cases to the total number was greatly increased. An interesting feature of the work in 1935 was the incidence of the voluntary patient; four offenders applied spontaneously for treatment in order to avoid relapse. The diagnostic groups consisted mainly of psychoneurotics (38) and "character cases (including psychopathic personalities, sex perverts apart from neurosis)" (26). Three were regarded as mental defectives and 7 as border-line mental defectives, 10 as psychotics, 5 as border-line psychotics; in 5 cases the delinquency was held to be of organic origin and in 2 so-called "normal" cases there was no sign of social or mental maladaptation apart from the offence. The organic conditions were encephalitis lethargica, senile changes in the arteries, and failure of sexual development.

The treatment of the delinquent falls into three groups: (*a*) physical, (*b*) psychiatric, including all the various forms of psychotherapy, and (*c*) sociological, in association with other institutions, penal and otherwise. All patients are examined physically and mentally, usually by different examiners. Preliminary physical examinations are carried out by the physicians attached to the West End Hospital for Nervous Diseases at its out-patient department in Welbeck-street, where rooms have been allocated to the clinic. Physical and psychological treatment are given concurrently. The need for an in-patient department and an observation centre grows each year, particularly for the recidivist and the ex-prisoner. Some 20 patients were seen during 1935 who in the interests both of public safety and of the patient should have been kept under observation. The psychoneurotic cases have been found the most easy and successful to treat, though anything from a few weeks to two or three years may be required to consolidate their re-education. The treatment of "character cases," whether delinquent or not, involves sociological methods such as the proper adjustment of environment and, where necessary, a period of residence at a suitable training centre. Research into the treatment and cause of these cases, with a view to the development of educational and other preventive measures capable of wide application, is one of the main objects of the clinic. Research schemes, however, are progressing but slowly, because no money for this purpose is available, though there is no lack of workers. At the recent annual meeting of the National Council for Mental Hygiene reference to the closer coöperation between the council and the Institute was envisaged and such an alliance would clearly be desirable.

HEALTH OF NURSES

THE reports of the Industrial Health Research Board noticed in our issues of July 25th and August 1st suggest that the health of nurses would be an excellent subject for their investigations. An authoritative report might provide material to remove a good deal of popular misconception on the subject and at the same time supply reliable data for the guidance of hospital authorities. A fairly satisfactory medical history is available as a general rule upon the acceptance of the candidate, and the notes of a detailed medical examination are obtained upon her entrance into the nursing school. The age of admission is recognised to be an important factor and yet present conditions are unfortunately leading to a lowering of it. The system of discipline would be a delicate matter for investigation, yet the reports of any hospital board would show that it must be noted in any estimate of the causes of sickness. A subject which frequently escapes notice is the extraordinary duplication of examinations in some hospitals.[1] The strain of examinations is generally recognised to be serious, yet it is thought necessary for a hospital to have its own examinations in addition to the State examinations. Research by the Board might show that hours of work are a secondary consideration to the conditions of work. It should also be possible to obtain data illustrating whether the methods prevailing in voluntary hospitals are better for the health of the nurses than those in council hospitals. In that connexion it might be possible to take into account the attitude of the patients which tends to be more exacting in the former. The experience of the investigators of the Board, however, could be relied upon to detect any of these or similar points which were germane to their inquiry. The report of THE LANCET Commission on Nursing offers many directions in which investigation would be useful, and somewhere it is very desirable. Attention may be especially drawn to the section on professional education.

[1] THE LANCET Commission on Nursing. THE LANCET LTD., 7, Adam-street, Adelphi, London, W.C.2. 2*s.* 6*d.*

ANNOTATIONS

SPEAKING AND READING

THE House of Lords lately discussed whether they would rather listen to a man who just told them what he thought or to one who read a prepared statement from neat typescript, and in general they decided that they preferred speeches which had at any rate some appearance of being extempore. Sporadic experience of some of the sessions of the recent International Congress of Microbiology leads us to suggest that those responsible for the conduct of these gatherings too might consider the matter: the congress was such an undiluted success and the organisation is now presumably so firmly established that the management can well spend a little thought on relatively small affairs. Many societies discourage, and some actually forbid, the reading of written communications except in circumstances of particular difficulty, and the custom is we believe a good one. Audiences like to be told interesting tales in simple language and the stately condensed sentences appropriate to the written word are out of place. The speaker who reads often fails to make his points: he does not reproduce the underlines or red ink of his script and it is almost as impossible for his audience to ask him to repeat a difficult sentence as it is to call on a B.B.C. reader to say it again. We have to frankly recognise that our conversational language is different from our written language and that, though we have not reached the degree of divergence which obtains in China, the former is needed by the listener, the latter by the reader. It would of course be impossible to have any hard and fast rule. Foreigners at an international meeting in England know that the great majority of the audience will understand them better if they use English, and obviously written papers must be allowed to them if they so desire, though one of the most vivid communications heard at University College came across in such a defective vocabulary and chaotic grammar as needed a brave spirit to cope with. There are too those who are so nervous that they dare not put out into the deep without a written life-belt: but it does not follow that they must needs use it, and if they would only try they would probably get on very well without it. Others again seem to think that the more important their message, the more necessary it is to have it in precise and considered language: it may be so but we would ask them to believe that they are the less likely to communicate it to their audience. We hope therefore that when this admirable congress meets again, the managers will give a hint that talking is preferred: after all, if people know what they want to say, most of them will have little difficulty in saying it.

THE PRINCE OF BEGGARS

WAS Sydney Holland a great man? asks Mr. Gore in the introduction to a memoir[1] of the late Lord Knutsford, and then proceeds to supply the answer. He tells the story of an average schoolboy, intended for the army but not considered clever enough to pass into "the shop," who became a barrister, only moderately successful. While still young, however, he learnt to appreciate his own abilities and limitations so that when, almost by chance, he took up social service as a life's work, his shrewd judgment of character enabled him to pick the right person for each job with uncanny skill. He was that all too rare a thing, a round peg in a round hole, and so could exploit his talents to the full. This memoir is a very personal document. It tells of Knutsford's work for Poplar Hospital, of his war-work—at the age of 60 he volunteered for foreign service as a sniper with his favourite rifle, but the War Office would only accept the rifle—and finally of his triumphant chairmanship of the London Hospital. It also tells of his family life, of his weakness for playing the clarionet badly, though quite unself-consciously, in unconventional places, and of his zest for field-sports. It would be hard to summarise the qualities which made his life successful in the best sense of the word, but among the principal must be counted his charm of manner, intense conviction, great energy, impish humour, and consummate cheek. All who cherish affectionate memories of "The Chairman" will appreciate this memoir and will want to possess it.

[1] Sydney Holland: Lord Knutsford. A Memoir. By John Gore. London: John Murray. 1936. Pp. 196. 7s. 6d.

WHAT IS SEBORRHŒA?

PROBABLY the hardiest perennial among the commoner dermatoses, seborrhœa is always with us in one form or another. During the war Dr. Henry MacCormac observed that "there is practically no skin disease in the army that is not complicated by seborrhœa." In civil life it is largely a disease of the poor, for it appears to be more common in hospital than in private practice. Whether this unequal incidence is due to a deficient and vitamin-poor diet or to infrequent washing is undecided, but either or both of these factors may have been responsible for its high incidence among troops in the trenches. In his practical article in the front part of our present issue Dr. John Kinnear defines the disease as "an abnormal increase in the activity of the sebaceous glands, evidenced by abnormal greasiness of the skin, and, especially on the face, visible enlargement of the openings of the follicles." His appeal for limiting the scope of the term is well timed, for seborrhœa is not a disease but a diathesis that predisposes to the development of acne, furunculosis, and certain characteristic dermatoses and scalp conditions. He has shown the true position of seborrhœa in the form of a graph, which compares its age-incidence with that of acne, tinea, pityriasis versicolor, and pityriasis simplex, all of which may be superimposed or may coincide with it. He asserts that seborrhœa does not occur in the infant or indeed in the child until it reaches the age of puberty, and that, therefore, the above complications or syndromes are virtually unknown before that age. There is more to be said for this view than against it, and a valuable point would be gained and much confusion saved if dermatologists would agree to confine the term—both noun and adjective—to conditions in which the diagnosis was unmistakable. His views are shared by Dr. G. H. Percival, who has lately complained[1] that the term is "vaguely used to cover not only conditions for which the title was unsuitable but also conditions due to different causes and presenting different clinical pictures." From these two opinions it is evident that even among dermatologists there is still a confusing disparity of nomenclature which is a hindrance both in inquiry and teaching. Whether we shall ever be able to control the onset and vagaries of seborrhœa when it is well established is another matter. Its relative limitation to the age

[1] See THE LANCET, August 1st, p. 259.

of puberty and early adult life suggests an association with endocrine activity in general, and this affords some hope that as our knowledge of glandular action and interaction increases we shall find more potent means of influencing the biochemical derangements at the root of it.

TIMES CHANGE

A FEW days ago, during a judgment which will probably restrict the modern generosity of judges and juries towards plaintiffs in libel actions, Lord Atkin gave a passing glance to the case of Clay *v.* Roberts "because of its reference to social conditions 79 years ago." On that occasion, in 1863, the Court of Exchequer decided that it could not be defamatory to say of a qualified medical practitioner that he met homœopathists in consultation. Some amplification of the reference may perhaps be permitted in our columns, since it was correspondence in THE LANCET which gave rise to Dr. Clay's action for libel. We had published a letter, signed by "Inquirer," which said it was reported in Hanley that Dr. Clay of Manchester had been meeting a professed homœopathist in consultation. "Inquirer" wanted Dr. Clay to give a reassuring answer in our columns. If the report was incorrect, it could not be refuted too soon; if correct, Dr. Clay's colleagues could not too soon be acquainted with the truth; there was a Medico-Ethical Society in Manchester to which they might like to refer the case. This elicited a second letter confirming the report mentioned by "Inquirer"; "Dr. Clay does meet homœopaths, and, I believe, regularly; three instances of deliberate consultation have occurred within my own knowledge." Such was the defamation which the plaintiff sought to bring home to the publishers of the correspondence. In the forensic formulæ of that generation the statement of alleged facts was followed by plea, demurrer, and joinder in demurrer. In the skirmishings on the plea the case was decided. Plaintiff declared, and defendant denied, that it was, and would be, disgraceful, according to professional opinion and professional etiquette, for a doctor to meet a homœopathist in consultation. Chief Baron Pollock and his brother Barons worried plaintiff's counsel with their queries. Would it be libellous to write of a lady of fashion that she had been seen on the top of an omnibus, or of a nobleman that he was in the habit of burning tallow candles? Ought not a distinction to be drawn between matters of taste and matters of crime, between imputations of the breach of conventional etiquette and imputations of conduct which was illegal, mischievous, or sinful? Is it a libel, asked Baron Wilde, to say of a man that he conducts his business in such a way as to injure his practice? You don't allege, remarked Baron Bramwell, that Dr. Clay was a person who, carrying on his business, would not meet a homœopathist, or that the College of Physicians would think it improper for him to do so? "The fact," said Chief Baron Pollock, "that an allopathist met a homœopathist in consultation would not, in my judgment, in any way expose the former to ridicule or contempt; quite the contrary; homœopathist physicians are regularly bred and educated practitioners." To cut the long-winded story short, the court gave judgment for the defendant; he was right in pleading that the alleged conduct would not be considered disgraceful and therefore that the letters were not defamatory.

These by-gone controversies encourage, as Lord Atkin hinted, trite reflections upon the changes which time brings. Ladies of fashion on the tops of omnibuses, noblemen burning tallow candles—such stories will not justify to-day "gold-digging" claims for heavy damages. As for changes in professional thought, we may note, not as an exact analogy to Clay *v.* Roberts but as an interesting historical fact, that the morning newspaper which reported Lord Atkin's judgment recorded also the demonstration of Sir Herbert Barker's manipulative technique before a large gathering of orthopædic surgeons at St. Thomas's Hospital.

FURTHER NOTES ON CUSHING'S SYNDROME

THE past few months have produced some interesting clinical and pathological observations on Cushing's syndrome but have not brought us much further towards understanding its pathogenesis. On the contrary, the significance of basophil adenomata of the pituitary becomes increasingly obscure, although it seems certain that the basophil cells proper of the anterior lobe are involved and may in some way be responsible for the disorder. Thus in the case lately reported in our own columns [1] the syndrome was associated with a chromophobe adenoma of the pituitary gland and the basophil cells of the surrounding tissue showed the peculiar hyaline change described by A. C. Crooke. This, in a male of 20, may be compared with another case, reported by Pardee,[2] in which hypertension, diabetes mellitus, abdominal adiposity with striæ atrophicæ, excessive fragility of bones, plethora, and hypertrichosis were associated in a male of 32 with a slight diffuse increase of the suprarenal bodies (no weight given) and "a striking predominance of basophil cells," but no adenomata in a normal-sized pituitary gland. These two examples resemble one another in their lack of a primary tumour of the kind that we have hitherto associated with this clinical picture. Clearly, however, a stimulating, presumably hormonic, substance has been produced in some part of the body—perhaps elsewhere than the pituitary—and there are already indications that a correlation will be provided by chemical investigations. Thus, in a case [3] of adrenal cortical carcinoma in a girl of 19, the urine was negative to the Aschheim-Zondek and Friedman tests but yielded "as much as 5000 mouse-units of estrogenic substance per liter, a quantity far exceeding that found in pregnancy." Analysis of the tumour tissue yielded twice the amount of œstrogenic substance that could be recovered from the same weight of spleen taken from the same patient. Similarly in a well-documented case (No. 2 in their series of adrenal cortical tumours) reported by Cahill and others,[4] the syndrome was associated, in a female of 36, with the excretion in the urine of "considerable quantities" of follicle-stimulating hormone. Operative removal of the tumour was followed by a remarkable remission of symptoms: gradual fall of blood pressure from 190/105 mm. to 116/74 mm. Hg, loss of excessive hair of masculine distribution, recurrence of menstrual periods, and cessation of excretion of ovarian hormone in the urine. Investigation of the excised tumour tissue for cortin was negative; its œstrin content has not yet been reported. Unfortunately the patient died a year later from the development of metastases and this had led to a reappearance of the

[1] Fuller, C. J., and Russell, Dorothy S.: THE LANCET, July 25th, 1936, p. 181.
[2] Pardee, I.: Amer. Jour. Med. Sci., 1935, exc., 1.
[3] Graef, I., Bunim, J. J., and Rottino, A.: Arch. Internal Med., 1936, lvii., 1085.
[4] Cahill, Loeb, Kurzrok, Stout, and Smith: Surg., Gyn., and Obst., 1936, lxiii., 287.

clinical syndrome. While these are not the first records of the excretion of œstrin in the urine in such cases they throw this feature into stronger relief and indicate an important line for further investigation. It is of interest that Graef and his co-workers [3] independently observed the hyaline cytoplasmic change in the basophil cells of the pituitary gland in their case; their coloured plate clearly shows it to be the same as that described by Crooke. Graef regards it as a selective degenerative change, but it is by no means certain that the accompanying nuclear degenerations described by him are not attributable to the terminal sepsis from which the patient died.

RAYNAUD'S PHENOMENON

To the July number of the *Quarterly Journal of Medicine* Dr. John Hunt contributes a "critical review" of "the Raynaud phenomena," which will be welcome to all who are interested in the clinical manifestations of peripheral vascular spasm. He deplores the confusion that for fifty years has attended the term "Raynaud's disease," and resolves a great deal of it by returning to Jonathan Hutchinson's term. Raynaud's phenomenon is a symptom which may occur in more diseases than one. It is defined, on the basis of Raynaud's description, as "intermittent pallor or cyanosis of the extremities, precipitated by exposure to cold, without clinical evidence of blockage of the large peripheral vessels and with nutritional lesions, if present at all, limited to the skin," which more shortly put is "attacks of 'dead' fingers or toes brought on by cold." This is a clinical definition, which Dr. Hunt equates with Lewis and Pickering's physiological definition—"active and intermittent closure of small arteries of the order of digital arteries, supplying the extremities."

Attacks of this kind may be observed in many clinical associations, and the bulk of Dr. Hunt's paper is devoted to classification and description of these, with illustrative records from Raynaud's writings and from his own experience. The phenomenon is common in the form of the "dead fingers" that many normal people experience on exposure to cold air or cold water; these occur in both sexes, appear first in childhood, and are apt to run in families, for which reasons they are grouped separately under the heading "Hereditary cold fingers," and distinguished from the rare true "Raynaud's disease," where the onset is in early adult life and the patient almost always a woman, the attacks being usually symmetrical and in general much more frequent and severe. To this latter group only, now well defined and much studied, the term "Raynaud's disease" may with advantage be restricted. Its ætiology is quite obscure. In a further group of patients, on the other hand, the phenomenon seems to have a direct relation to the use of vibrating tools, such as pneumatic drills and riveting machines; it begins in the fingers nearest to the vibrating end of the tool, and spreads to the others, but the exciting cause of each attack is not vibration but cold. In those three groups Raynaud's phenomenon occurs unassociated with known structural lesions of the vessels involved or of adjacent parts, though admittedly evidence of the histological appearances of those vessels is scanty. In the remaining groups structural lesions are present. Raynaud's phenomenon is often associated with the form of scleroderma which affects hands, feet, and face; it may precede the skin changes; intimal thickening and medial fibrosis are found in the vessels. Raynaud's phenomenon in the feet is a feature of about one-third of all cases of thrombo-angiitis obliterans in their earliest stages, but is no longer evident by the time claudication and rest-pain are prominent. It may also occur in feet whose vessels are moderately narrowed by arteriosclerosis. An infrequent but interesting association is with syphilitic arteritis, and Dr. Hunt emphasises that it is in syphilitic patients only that Raynaud's phenomenon in the extremities is accompanied by either hæmoglobinuria or necrotic lesions of nose and ears. He describes also a rarer form of arteritis in the limbs, which proceeds in the space of days to almost complete obstruction and then recedes, Raynaud's phenomenon appearing in the intermediate stages; this sequence of events follows a streptococcal tonsillitis. Dr. Hunt's final group includes a number of miscellaneous conditions, like leukæmia, advanced phthisis, and polycythæmia vera, in which Raynaud's phenomenon may occasionally be seen, but where its basis is still quite obscure.

The mechanism of Raynaud's phenomenon is only briefly discussed. While it is generally agreed that in an attack the digital arteries close completely, there is still doubt how far sympathetic vasoconstrictor impulses contribute to that closure. Dr. Hunt accepts Lewis's position—namely, that vasoconstrictor tone or an increase in vasoconstrictor tone may certainly contribute, but that there is no satisfactory evidence that vasoconstrictor tone in patients showing Raynaud's phenomenon varies beyond normal physiological limits. The vessels in question also react by constriction to the effect of direct cooling, but even this combined with sympathetic vasoconstriction will not bring about complete closure of normal vessels (unless perhaps in the peculiar circumstances of Dr. Hunt's experiments on himself, where the temperature of the whole body and of the blood was lowered to 94°–95° F.). An abnormality of the vessels must therefore be postulated to explain Raynaud's phenomenon. In the later groups of Dr. Hunt's classification this is presumably the structural change known to be present; the vessel is already so much narrowed thereby that moderate contraction of its media can close it. The familiar method of recording the rise in skin temperature during anæsthesia of the sympathetic supply to the vessels will demonstrate the organic narrowing. In the earlier groups however—hereditary cold fingers, "Raynaud's disease" proper, and Raynaud's phenomenon in vibratory tool workers—no structural change is known and sympathetic paralysis will produce full vasodilatation. Here the abnormality must be "functional," an abnormal reactivity to local cold. There the matter stands. From the practical aspect these considerations indicate what may be expected of sympathetic ganglionectomy as a therapeutic measure. It cannot remove the local abnormality in vessels that display Raynaud's phenomenon, but it does remove the normal vasoconstrictor impulses which, added to the local abnormality, contribute to the occlusive spasm. Where the local abnormality is structural (and usually progressive), this seldom benefits the patient much or for very long, but in the case of "Raynaud's disease" proper, where the local abnormality is apparently functional, ganglionectomy diminishes the frequency and severity of the attacks to an extent for which most severely affected patients are grateful. The operation is worth trying in some cases of scleroderma with Raynaud's phenomenon, but it is then less promising, while in the people with hereditary cold fingers and the workers with vibrating tools the severity of their symptoms rarely justifies it.

These conclusions, like all his arguments, Dr. Hunt

bases on a very extensive study of the literature and a considerable personal experience. His survey should do much to bring about a wider and clearer recognition of Raynaud's phenomenon and its significance, as well as a more accurate diagnosis of the disease process in patients who present it.

REACTIONS AFTER DIPHTHERIA TESTS

ATTENTION has lately been drawn to two rare types of reaction that may follow the Moloney and Schick tests, and it is desirable that workers using these tests should have a clear picture of these reactions so that they will not be surprised or unduly alarmed if they meet them. In 1934 A. Taylor, of Dandenong, Australia, reported a peculiar reaction which in about 1 in 1000 cases follows the injection of formol toxoid used in the Moloney test, and it has now been described in some detail by C. R. Merrillees.[1] The Taylor reaction develops in persons who would be passed as Moloney-negative if the test were read at the usual time. It appears about 48 hours later than the Moloney reaction and differs from it by having a raised shiny surface and a mottled red colour. It develops later than the true Moloney reaction, being best read about the fifth day, and its discoloration is much more persistent. It seems to occur only in Schick-positive persons, and according to Merrillees it indicates that the subject is likely to react severely when given the usual immunising doses of formol toxoid. The other reaction was described in our own coloumns last week by Dr. Parish. It is a rare sequel to the Schick test, and the symptoms, which may come on a few minutes after the injection, are those that may be expected on injecting foreign protein into a highly sensitive person—local weals, œdema of eyelids and lips, faintness, and dyspnœa. Most of the people who reacted in this way had had previous injections of diphtheria antigens or antitoxin, and two were known to be sensitive to Witte peptone injected intracutaneously. Of 14 patients 4 were adults and the others children ranging in age from 11 months to 15 years. It is hard to estimate how often one may expect to encounter such reactions after the Schick test, but Monroe, Volk, and Park[2] observed only 2 cases in 7000 immunisations. Parish points out that there seem to be no records of this type of accident before 1934, and he makes the interesting suggestion that they are due to the peptone which has in recent years been added to many preparations of Schick toxin dilutions with a view to stabilising them. Two of the patients in his own series were known to be sensitive to Witte peptone and he quotes a similar case of Bousfield's. Though the possibility of general reactions after the Schick test must not be forgotten, they are neither common enough nor dangerous enough to be considered a serious drawback.

NUTRITION ABROAD

A FORTNIGHT ago we reviewed two new reports issued by the League of Nations under the heading of the Problem of Nutrition. They are now joined by a third,[3] which is concerned not with the static subject of adequacy or inadequacy of diets but with the dynamic one of what is being done (for better or for worse) by nutritional policies, both national and private, in various countries. Of course the policies are almost entirely for the better and to read the volume is to have a glimpse of the big and widespread changes the "newer knowledge of nutrition" has made. Each country mentioned now makes some provision of food for needy children, for expectant mothers, and for unemployed. But in spite of this common ground the methods of tackling nutritional problems are intriguingly different. Czechoslovakia regards the lowness of the diet of employed persons as a loss to the nation, not so much because it may lead to ill-health as because it certainly represents small expenditure, and thus contributes to the depression. In France the State does little to control the diets of the insured and the unemployed, but it is now being suggested that the insurance companies that have to pay for sickness should be able to take some action in connexion with the nutrition of their subscribers. In France the distribution of unemployment relief in kind is discouraged for fear that the employed should be relatively worse off. The State of South Australia goes to the other extreme: a complete ration, including three loaves and 3½ lb. of meat per week, is provided for the unemployed adult.

The fitting of nutritional requirements to the local agricultural produce or to the Government's policy is considered in several of the countries—notably the Argentine, Latvia, and Italy. In Latvia, because of a State monopoly, the Government is encouraging greater consumption of sugar. In Great Britain, on the other hand, the view is taken, on the basis of the Orr Report, that much money spent on sugar were better spent on vegetables. In this report the various statements about each country are written from within that country, and each reflects in some measure its form of national pride. To take two examples: the Italians, making a virtue of necessity, give an account of their extensive diet propaganda issued on account of sanctions. Their instructions, among others, are that a portion of meat, fish, dairy products, fruit, or vegetables should be included in the day's menu. But Finland, the country with the highest consumption of dairy produce per person, by deploring the present nutrition of its poorest inhabitants, shows its keen sense of how much more can be done.

RELIEF OF INTESTINAL DISTENSION

EXPERIMENT and experience alike testify to the disastrous results of suddenly releasing pressure in obstructed bowel. Sir William Wheeler, on p. 361, describes the case of the patient who dies soon after a comparatively simple operation for the relief of obstruction, although the utmost care has been taken to combat shock. Such a patient dies with symptoms of acute toxæmia; the operation that was designed to save him has almost certainly hastened his end. The fault, according to Wheeler's observation, is that the release of distension has been too sudden. Many operations for relieving obstruction include the insertion of a tube into the lumen of the gut for drainage purposes, and in acute cases, Wheeler says, it is important that this tube should be of small calibre, and the drainage slow and gradual. He suggests that the cause of the collapse following sudden decompression is sudden vascular dilatation in the wall of the bowel; like those of the overdistended bladder or gall-bladder the damaged tissues cannot respond to the rapid increase of circulation, whereas gradual release of tension would be followed by gradual recovery. Aird and Henderson's experiments, reported on p. 373, provide equally cogent evidence of the danger, though not quite the same explanation of it. In animals they

[1] Med. Jour. Australia, 1936, i., 503.
[2] Amer. Jour. Pub. Health, 1934, xxiv., 342.
[3] League of Nations. Problem of Nutrition. Vol. III. Nutrition in Various Countries. Obtainable from George Allen and Unwin Ltd., London. 1936. Pp. 271. 5s. 6d.

find that the initial rise of blood pressure resulting from rapid distension of the intestine by gas is followed by a fall, which they attribute to the pouring-out of fluid into the distended loop. If the distension of the bowel is released within six hours, the reabsorption of this fluid is sufficient to raise the blood pressure; but if the release is deferred until after six hours the pressure falls. This is not because the damaged gut cannot absorb fluid; nor is it a nervous effect; and they are forced to conclude that the depressor effect of delayed and sudden decompression is due to absorption into the suddenly dilated arterioles of a toxin from the bowel. Whether they are right or wrong it is clear, as Sir David Wilkie put it, that gradual decompression is as essential in the surgery of intestinal obstruction as it is in the surgery of the prostate and gall-bladder.

MEDICAL AID FOR SPAIN

A LETTER in our correspondence columns describes what is being done towards sending medical help to Spain. No careful reader of the news can doubt that such help is desperately needed: at a time when the normal organisation of life is rapidly breaking down, and civil war is multiplying disease and death, it is impossible that hospitals and doctors of this poverty-striken country should cope with the situation by themselves. Whatever our political sympathies, we may believe that a sincere attempt to relieve suffering will do good rather than harm, and nobody regrets that such an attempt was made in Abyssinia. The new venture will inherit not only the good wishes given to its predecessor but also at least one of its members and the equipment of a unit which never left England. At the time of writing the members of the first party have not all been selected; nor has their destination in Spain been decided. We understand that the organisation of equipment and personnel is in the hands of Mr. K. Sinclair-Loutit, 14, Great Ormond-street, London, W.C.1.

AMŒBIC DYSENTERY

THE Chicago epidemic of 1933, occurring as it did during the Century of Progress Exposition, was a major disaster, but by thorough and exact study[1] the United States public health service has wrung from this disaster information of lasting value to the medical profession. The epidemiologist has learned that amœbic dysentery may be, as it almost certainly was in this case, a water-borne disease. The sanitary engineer has learned of a new major menace of defective plumbing, and further that the usual methods of chemical purification of water are ineffective against the cysts of *E. histolytica*, which may nevertheless be removed by filtration. The most valuable of the lessons, however, are those made available to the clinician. This study gives us the first reliable data on the incubation period of amœbic dysentery. This was found to be 1 week or less in 6·7 per cent. of cases, 1–4 weeks in 59 per cent., 4–8 weeks in 24·7 per cent., 9–13 weeks in 7·4 per cent., and over 13 weeks in 2·2 per cent. The mistakes made in differential diagnosis call attention to the inadequate teaching which has been given in this disease. Amœbic dysentery has been thought of too often as a disease limited to the tropics. The practitioner in the temperate zone has thus been off his guard. It is found that manifestations of amœbic infection have been thought of not only as "colitis" but as appendicitis, malignant disease of the colon, and surgical conditions of the rectum. Apparently fever can accompany amœbic dysentery; and physicians were sometimes misled, in cases wherein fever was an outstanding symptom, into seeking long and vainly for confirmation of a diagnosis of typhoid fever or malaria. Cancer was the commonest of the reported erroneous diagnoses. The reporters tersely remark that "specific therapy proved to be remarkably effective. On the other hand, non-specific medical measures were usually disappointing and surgical intervention often disastrous." That amœbic dysentery must be continually remembered in differential diagnosis they regard as the most important clinical lesson provided by the outbreak. Those interested in the symptoms, signs, and pathological findings will do well to study this valuable, and inexpensive, monograph.

[1] Epidemic Amœbic Dysentery: The Chicago Outbreak of 1933. National Institute of Health Bulletin No. 166. Washington: Government Printing Office. 1936. Pp. 156. 20 cents.

H. A. D. JOWETT

THE death of Dr. Jowett in a road accident last Monday morning at the age of 66 is a serious loss to the British fine-chemical industry and to pharmaceutical research. As manager of the Wellcome Chemical Works at Dartford he had shown high ability both as investigator and administrator. As a young man Jowett carried off all the prizes which the Pharmaceutical Society could offer him, and graduated as D.Sc. Lond. at 25. Soon afterwards, in 1896, he joined the Wellcome Chemical Research Laboratories and in the years that followed he made many contributions to knowledge among which he will be specially remembered for his studies of the alkaloids—notably hyoscine, hyoscyamine, atropine, and jaborandi. When at the outbreak of the late war our supplies of many drugs were cut off he showed a quick resourcefulness in devising ways of producing English counterparts of valuable foreign remedies such as salvarsan. Subsequently he devoted much of his time to the quick and reliable production of insulin and original preparations of digitalis and ergot. He was a firm believer in the superiority of active principles over the whole drug and worked for what he called "the ideal state of administration of such remedies." He was also keen on the biological control of potent drugs, and on that coöperation between investigators, manufacturers, and medical men which is needed for the best results in clinical practice. In this coöperation as well as in research itself he played a great part.

THE appointment by the governors of the Royal Veterinary College is announced of Mr. J. Basil Buxton, F.R.C.V.S., D.V.H., professor of animal pathology in the University of Cambridge and director of the Institute of Animal Pathology and of the University Field Laboratories, Cambridge, as acting principal and acting dean of the college, and as principal and dean on Sir Frederick Hobday's retirement, which is impending with the opening of the main block of the new college buildings.

THE King has given permission to Mr. John Gilmour to wear the insignia of grand officer of the Order of the Nile, and to Dr. Alexander Cruickshank and Dr. A. E. Lorenzen to wear the insignia of the fourth class of the Order. These decorations were conferred upon them by the late King of Egypt in recognition of valuable services rendered in the employment of the Egyptian Government.

PROGNOSIS

A Series of Signed Articles contributed by invitation

CXI.—PROGNOSIS IN LEPROSY

I*

THE IMPORTANCE OF PROGNOSIS

LEPROSY is not a fatal disease. The patient dies from complications and neglect rather than from the disease itself. It is perhaps because of this non-fatality, and because the patient is afraid that he may be doomed to long years of suffering, perhaps more mental than physical, that he so much fears leprosy. He has heard of, or perhaps seen, lepers in their more repugnant forms. The word "leper," or its equivalent in other languages, is associated with the last degrees of degradation and abhorrence. In India it is called "the great disease." The public and even the medical profession are unaware that leprosy may be a very mild disease, and that even without special treatment many cases recover completely.

Because of all these facts, a reliable prognosis is perhaps of more importance than in most other diseases. In many diseases the infecting organism varies in virulence under certain circumstances, such as repeated and rapid passage from host to host. There is no reliable evidence that the virulence of *B. lepræ* varies in this way. The two important factors to be estimated in making a prognosis in leprosy are the concentration and distribution of the bacilli in the body and the resistance of the patient to the infection.

As in tuberculosis, so in leprosy also, many are infected who never develop the disease. In others there are abortive clinical signs which appear chiefly in the form of macules during some period of debility, and disappear again when the general health is restored. In others again the disease is confined to a single nerve and its branches, the infection being unable to escape either through the epineurium or through the terminal branches in the skin. In some cases two or more nerves are affected in this way, but the disease is not generalised.

LOCALISED INFECTION

The confining of the infection to one or more nerves is a sign of comparatively high resistance to the disease. Clinically there are signs of thickening and tenderness of the nerves affected, and local neural signs in the form of sensory, trophic, and vascular changes in the skin, muscles, bones, and joints. In these cases the lesions may remain stationary for a considerable period of months or even years, or active signs may gradually disappear, self-healing taking place. If at any time, while infection still persists, the patient becomes seriously debilitated due to an intercurrent disease or other cause, there is always the danger of exacerbation and widespread generalisation throughout the body. In India—and there is reason to believe that the same holds good in many other endemic countries—more than half the patients showing clinical signs of leprosy belong to this resistant class. In them the prognosis is favourable, and it is so in direct proportion to the restriction of nerve involvement. While in a certain number of cases the disease is abortive and self-healing, in many others special treatment is necessary for ultimate recovery. In all, the factor of most importance is the restoration, improvement, and steady maintenance of as high a standard as possible of general health.

GENERAL INFECTION

In contrast to the cases described above are those in which the infection is not confined to the nerves, but spreads through the skin and mucous membranes, invades the lymphatics, and involves the internal organs. This form of leprosy is much more actively progressive. At least to begin with, the clinical signs tend to be less conspicuous than those of the resistant form. For although the concentration of bacilli is greater, the tissue reaction to the bacilli both in the skin and in the nerves is considerably less. The disease is thus frequently able to spread throughout the body without attracting the attention either of the patient or of the physician. Later, as the concentration of bacilli increases enormously, more conspicuous lesions appear in the form of skin thickening and nodulation. This latter is the cutaneous form of leprosy. It is found in patients in whom resistance to the infection is low. In this form the nerves are also invaded—to a greater degree indeed than in nerve leprosy—but, as tissue reaction in the nerves is absent or only slight, the sensory, trophic, and other signs dependent on neural involvement are also comparatively slight.

In this connexion it should be stated that leprosy is a disease of exceedingly low toxicity. Its signs and symptoms are due not to toxins set free in the circulation but to the tissue reaction which the presence of *B. lepræ* excites locally. The local response to *B. lepræ* is in direct proportion to the local concentration of *B. lepræ;* but a much more potent factor in determining the cellular reaction is the resistance or immunity of the patient, which varies greatly in different cases.

We have indicated the two chief types of leprosy; the contrast between them is chiefly due to the degree of resistance, which is high in the former or neural type, and low in the latter or cutaneous type. As, however, in many cases the resistance varies considerably from time to time the signs of both types may be present at one time forming the *mixed* type of leprosy.

FACTORS INFLUENCING RESISTANCE

It will be plain from the above that the prognosis depends very largely on the resistance of the patient. There are four main factors which influence the degree of resistance.

1. Natural resistance to leprosy is strong in healthy adults. Human leprosy has never been transmitted to experimental animals as a progressive disease, and their high resistance is apparently shared by healthy human adults. Also as with most other infectious diseases the degree of natural resistance to leprosy is probably greater in some subjects than in others, apart altogether from the state of their general health. It has been stated by some writers that this natural resistance not only applies to the individual, but also that in areas where leprosy has for a long time been endemic the more susceptible are gradually eliminated and that thus race immunity is evolved. While this may be argued from the analogy of certain other diseases, there is but little direct evidence in its support.

2. Natural immunity is most markedly influenced by the age factor. In early childhood the resistance

* Part II. will appear next week.

to leprosy is very low. Our recent surveys in Calcutta and in the Bankura District of Bengal show that children who have lived in close contact from their earlier days with infectious relatives or servants, in households where special precautions were not taken, seldom escape the disease; and the majority develop the severe infectious cutaneous type of the disease. Older children and adults exposed apparently to the same infection commonly either escape the disease or develop mild non-infectious lesions of the neural type.

Children infected in the first few years of life often show the "juvenile" type of the disease. Slight depigmented macules with roughening and keratosis of the surface of the skin appear on different parts of the body from time to time, but bacteriological examination of these lesions is generally negative. About the age of puberty these macules may disappear permanently with recovery of the patient, or they may develop and show the cutaneous and infectious type of the disease; much depends upon the general health as the determining factor.

3. Most of those infected after the susceptible age-period—say after the tenth year—escape the severe and infectious type of the disease. If, however, the general health is severely depressed, or is even slightly depressed for a long period, the cutaneous (severe) type of the disease may develop. Such depression of health may be caused by a variety of causes: complicating diseases, dietary errors, pregnancy, &c.

4. Another cause of weakened resistance to leprosy is of a more specific nature—viz., the increase of the infection in the body beyond a certain degree. Thus a vicious circle is produced, the bacillary concentration facilitating the further increase of bacilli and paralysing the mechanism which would arrest that increase.

In contrast to the above is the effect of small infections, which generally tend to increase or supplement the natural resistance. Thus, in patients who have passed the age of increased susceptibility and are in fairly good health, contact even with highly infectious cases may, with or without the appearance of mild leprous lesions of the neural type, develop an acquired immunity. Even in healthy young children this specific immunity may be formed, provided that contact is not too frequent and the degree of infection be not too great.

Among healthy adults there tends to be a considerable hiatus between what we term "resistant" and "non-resistant" cases. In the former the disease frequently dies out or remains stationary for long periods of years without showing any tendency to increase; in the latter it tends to progress. The hiatus between the resistant and non-resistant case may be broken down by anything which impairs the general health.

In determining the resistance of the patient we rely chiefly upon the clinical and bacteriological examination. In addition, however, the leprolin test is of considerable value, and the erythrocyte sedimentation test is of great use in estimating the general resistance.

ERNEST MUIR, LL.D., M.D.,
Medical Secretary of the British Empire Leprosy Relief Association.

THE SERVICES

ROYAL NAVAL MEDICAL SERVICE

Surg. Comdrs. O. D. Brownfield to *Enchantress*; A. E. Phillips to *Victory* for R.N.B. and to *Shropshire*; E. L. Markham, O.B.E., to *Victory* for R.N.B.; and F. H. Vey to *President* for course.

Surg. Lt.-Comdrs. E. J. Mockler to *Pembroke* for R.N.B. and to *Neptune*; and J. M. McNamara to *Danae* (on commg.).

Surg. Lt.-Comdrs. (D) E. R. Longhurst to *Victory* for R.N.B.; L. M. Hughes and E. C. Bevis to *Pembroke* for R.N.B.

Surg. Lt. (D) F. L. Ferris to *Woolwich*.

ARMY MEDICAL SERVICES

Maj. J. M. Macfie, M.C., R.A.M.C., relinquishes his appt. as Dep. Asst. Dir.-Gen., Army Med. Servs., War Office.

Maj. W. J. F. Craig, R.A.M.C., to be Dep. Asst. Dir.-Gen., Army Med. Servs., War Office.

ROYAL ARMY MEDICAL CORPS

Maj. F. Harris, M.C., relinquishes the appt. of Asst. Professor, Roy. Army Med. Coll.

Maj. A. E. Richmond, O.B.E., to be Asst. Professor.

ROYAL AIR FORCE

Wing-Comdr. C. P. Barber to Head Quarters, Training Command, Market Drayton, for duty as Deputy Principal Medical Officer.

Squadron Leaders G. M. Anderson to No. 6 Flying Training School, Netheravon, for duty as medical officer; and A. A. Townsend, to No. 7 Flying Training School, Peterborough, for duty as Medical Officer.

Flight Lts. R. Thorpe to R.A.F. Station, Heliopolis, Egypt; M. T. O'Reilly to R.A.F. Station, Worthy Down; and C. H. Smith to R.A.F. Depôt, Uxbridge.

Flying Offr. A. B. Marshall to No. 45 (B) Squadron, Helwan, Egypt.

Dental Branch: Flying Offr. J. H. G. Fensom to R.A.F. Station, South Farnborough.

RESERVE OF AIR FORCE OFFICERS

C. W. Flemming is granted a commission as Squadron Leader in Class D.D.

A. Ronald is granted a commission as Flying Offr. in Class D.D.

The undermentioned resign their commissions on the dates stated consequent on the conversion of the Special Reserve to the Auxiliary Air Force: Flight Lts. F. G. Mogg and R. H. Vartan.

AUXILIARY AIR FORCE

No. 501 (County of Gloucester) (Bomber) Squadron: F. G. Mogg is granted a commission as a Flight Lt.

No. 504 (County of Nottingham) (Bomber) Squadron: R. H. Vartan is granted a commission as a Flight Lt.

INDIAN MEDICAL SERVICE

Indian Medical Department.—Capts. (Sen. Asst. Surgs.) to be Majs. (Sen. Asst. Surgs.): J. B. V. Braganza and J. B. D'Souza.

Maj. (Sen. Asst. Surg.) J. M. Pereira retires.

Lts. (on probn.) to be Capts. (on probn.): C. K. Byrnes, J. A. L. McCullough, D. J. P. Parker, C. L. Ash, T. C. M. M. Morrison, W. M. Niblock, H. J. Gibson, S. W. Allinson, A. W. Sampey, J. Reidy, G. C. Welply, C. L. Greening, C. B. Jones, and G. F. Adye-Curran.

Capt. B. F. B. Russell resigns his commn.

DEATHS IN THE SERVICES

The death occurred on July 28th at Grayshott, Hants, of Lt.-Col. FREDERICK ARTHUR LUCAS HAMMOND, I.M.S. (retd.). Born in November, 1871, he was the eldest son of the late Canon Hammond. Educated at Charing Cross Hospital, where he subsequently occupied various posts, he qualified M.R.C.S. Eng., 1894, M.R.C.P. Lond., 1910, took the D.P.H. Camb. in the same year, and eventually the M.D. Durh. in 1921. He joined the I.M.S. in July, 1896; in 1900 was officiating civil surgeon; in 1902 officiating sanitary commissioner of Burma, and later officiating civil and jail surgeon, Thayetmyo. He had also been resident medical officer at Rangoon General Hospital. He became major in January, 1908, and later lt.-col., and retired in March, 1919.

SPECIAL ARTICLES

RUSSIA TO-DAY

MEDICINE UNDER SOCIALISM

(FROM A SPECIAL CORRESPONDENT)

II *

WHENEVER I mention doctors you will be visualising men with a benign expression and a black bag. No doubt there is still an international medical facies; indeed a two-year-old Russian child diagnosed me as a doctor at thirty paces. But a somewhat radical difference between medical men in the U.S.S.R. and in other countries is that in the U.S.S.R. two-thirds of them are women. At a Moscow polyclinic the assistant director (herself a woman) said they would be pleased if they could collect 50 men, including chauffeurs and porters, in the whole staff of 600. When I asked whether any distinction was made between sexes in the allocation of work my question was treated with kindly contempt. Of *course* not.

A second difference is that in England all doctors have had substantially the same training up till qualification; whereas in Russia there are three kinds of medical students. In England the young graduate reckons to be omniscient; whereas in Russia he or she enters professional life already labelled as general doctor (75 per cent.), hygienist (10 per cent.), or pædiatrician (15 per cent.). For the first half of the five years' course the curriculum is the same for all, but after two and a half years the future public health officer does less clinical work and concentrates on subjects like epidemiology, while after four years the future children's doctor confines himself to pædiatrics. In an interview granted me by a senior official of the Ministry of Health in Moscow [1] I asked whether this system is more than a makeshift—whether it is really thought well that students should start vocational training before they qualify. The reply was that the present arrangements would hold for the next few years, but beyond that it was impossible to say; "everything changes in this country."

The immediate demand is for more doctors of all kinds. A newspaper for young people has lately been making inquiries about openings in the professions and was told that "tens of thousands of positions can be offered any day to doctors, nurses, obstetricians, assistant doctors." [2] Tsarist Russia, within the present borders of the U.S.S.R., had fewer than 13,000 qualified doctors,[3] but now the number has been raised to 90,000, and some 60,000 students are in training. New universities and medical schools are springing up all over the country, and the amount of money spent on medical students, per head, has been increasing rapidly from year to year; so that already, it is claimed, the general level of education is not inferior to that of Russian doctors before the war.

To supplement the qualified men and women there are assistant doctors or feldschers, comparable to trained nurses or to the sub-assistant surgeons of India.[4] Some of these are former medical students who have met with repeated reverses in their finals; others have taken a whole-time course of three years; others again (a diminishing proportion) have combined a longer course with daily wage-earning. In view of the admitted dangers of partial knowledge I wanted to hear whether the feldscher too is regarded as a makeshift, only tolerable while qualified men and women remain scarce. But it is not so. There are innumerable jobs, at collective farms, in maternity hospitals, and at creches, that can suitably be filled by these assistant doctors, and the present aim of the authorities is to get rid of the *untrained* helper and extend the "middle staff" of feldschers and nurses. For dentists, too, there are unlimited opportunities when they have completed their four years' curriculum.

SECRECY AND STIGMAS

A third big difference between English and Russian doctors is that the latter are much more closely bound to the State. The medical student receives a stipend to support him during his years of preparation, and when he qualifies he will almost certainly get his salary from the State or from some large social organisation. In these circumstances no money passes from patient to doctor; the doctor is under no special obligation to defend the patient's interests, to befriend him against a hostile world; and the doctor becomes primarily the servant of society. This process is at work in England too; but in the Soviet Union it has already reached its logical conclusion in the abolition of professional secrecy, confidence, or privilege—our time-honoured means of ensuring frankness in the doctor-patient relationship. It was pointed out to me that secrecy is impossible in a world where illness has become the affair of the whole community and where its efficient treatment, with payment of sickness benefit and provision for convalescence, depends on certificates coming under scrutiny by fellow-workers as well as officials. Though periodic physical examination has not been introduced in Russia, few townspeople will escape the net which catches them for inspection at birth, at creche, at school, at factory, and whenever they go to a holiday home or rest-house. With so much inquiry it must be hard indeed to keep a secret; but—and this is where Russia differs from other countries—there are no longer such cogent reasons why anyone should mind his medical history being public property. Professional confidence has become pointless in Russia, they say, because nobody any longer attaches a stigma to particular illnesses. In the Soviet Union venereal infection, tuberculosis, and insanity are looked on as diseases like other diseases: serious, important; to be prevented, cured, or relieved; but no more shocking, no more to be concealed. Under the Red Flag the gonococcus and the spirochæte resume their place among the other pathogens.

MEDICAL PRACTICE UNDER ORDERS?

In my first article I tried to explain how far the Russian patient can choose his own doctor. To most of us a more important question is how far the doctor, as State servant, can choose his own work.

The Soviet Union, though smaller than the old Russian Empire, is still an enormous territory comprising a sixth of the Earth's land surface, and it includes huge areas where the people and their

* Part I. appeared last week.

[1] This Ministry, known as the Narkomsdrav or People's Commissariat of Public Health, is nominally responsible only for the affairs of the Russian Socialist Federative Soviet Republic. But as the R.S.F.S.R. contains two-thirds of the population of the Soviet Union its government usually takes the lead, and the Moscow Narkomsdrav will no doubt provide the basis of the semi-centralised Union-Republic Commissariat of Public Health which is to be established under the new Constitution.

[2] Quoted in Moscow Daily News, June 27th, 1936.

[3] Soviet Medicine. By Sidney and Beatrice Webb. London, 1935, p. 842.

[4] The origin, status, and work of the feldscher were described at length in an article on Russian medicine published in THE LANCET in 1897 (vol. ii., p. 343). At that time there were more feldschers than doctors in Russia; most of them had been trained in military hospitals or army feldscher schools.

life are very primitive indeed. In most backward countries it is a sheer impossibility to get enough doctors to practise among the scanty populations of the wilds, and I was anxious to discover how far the Soviet authorities insist on their doctors undertaking such uncongenial tasks.

A junior official of the Ministry of Health made it appear that there is no insistence at all; young practitioners go to the country because they are anxious to do their part in the national effort, because the cost of living is lower, and because long periods of study leave are granted His senior colleague was more frank. Our aim, he said in effect, is to let everybody choose his own occupation and follow his own bent; but we are in dire need of doctors and we have to demand that all shall serve the State for three years after qualification. The usual plan is to send the newly qualified to an institution or as assistant to someone already in practice, and only the most capable are sent out on their own. If a preference is shown, the new graduate goes to the locality he selects. Early specialisation is considered undesirable, and only at the request of their professors are brilliant students allowed to escape their period of general service.[5] Eventually, it is hoped, a scheme will be realised by which graduation will always be followed by a year's assistantship at one of the hundred best hospitals in the R.S.F.S.R.

Granted, then, that his first three years belong to the State, how free is the doctor to arrange his own career? I was repeatedly told that he was wholly free. While working in an institution he must carry out the wishes of his chiefs, but if he wants to become a psychiatrist rather than a pathologist nothing and no one will stand in his way. Indeed I heard of engineers—and engineers are prized in Russia—who were readily allowed to throw up their valuable work and follow an inclination to study medicine at the State's expense.

RED RED TAPE

The young Russian, I was led to suppose, respects his superiors, and this is the basis of his service. The only doubt is whether junior and senior alike are not hobbled and tethered by indestructible red tape. Is it possible that medical service in the Soviet Union should escape the bane of most large organisations?

Here, in Moscow as in London, we are on delicate ground, and direct questioning may be inadvisable. I learned, however, that although in large institutions it has been found best to free the medical director from purely administrative functions (finance, supplies, &c.), the lay administrator must nevertheless "report" to him—that is acknowledge his general directorship. This modified division of duties obviates the sterilisation of medical ability by its devotion to administrative tasks, and enables the doctor to do his proper work unhampered. In actual fact if I heard one story of bureaucratic obstinacy I heard half a dozen stories of facilities willingly granted. The official encouragement of Pavlov's investigations is common knowledge, and can be dismissed, no doubt, as exceptional. Let me therefore take a smaller example which I believe to be equally characteristic. I asked the head of a small mental hospital how he came to be studying the Berger rhythm of the cerebral cortex. "I read a book about it," he said; "then I went to the proper authorities and told them what I wanted, and in six weeks they had fitted up a laboratory for my investigation."

There is one substantial reason why red tape may never become really luxuriant in Russia, and that is the habit of public criticism that is everywhere—or nearly everywhere—encouraged. So long as one does not criticise the régime in general one is quite at liberty to criticise its application in detail; and this process is exhibited in the "wall newspapers" that are displayed in clinics and hospitals just as in factories and workshops. The wall newspaper, which looks like a glorified notice-board, contains not only local news but also local opinions; and since all workers are equal off duty there is ample scope for scathing comment. At the same time this is limited by the general rule that the technician is supreme in his own sphere—that his technical work can be criticised only by people with similar knowledge. In a ship, for instance, the final power lies in the "ship's meeting," comprising the whole crew, and the most important person on board is probably not the captain but the chairman of the ship's committee; yet as a technician the captain is none the less supreme. His behaviour as a *man* can be judged and condemned by the crew, but they are not entitled to question his technical orders or his handling of the vessel. As another kind of technician a doctor is in the same position as a captain.

The evils of bureaucracy, it will be agreed, arise largely from injudicious standardisation, and in my principal interview at the Ministry of Health I was given a useful indication of the lengths to which standardisation is carried and the bounds that are set upon it. First and foremost it was emphasised that in medical treatment full liberty of practice is given. "We believe that in medicine competition will give the best results." In the prescription of drugs an attempt at uniformity was at one time made: standard prescriptions were devised and numbered (1, 2, 3, &c.) for the convenience of doctor and dispenser; but this system was found to lessen initiative and was quickly discontinued.[6] In buildings and equipment, on the other hand, standardisation is useful and is being steadily developed: there are standards for hospitals, for nurseries, for village maternity homes, and for various other institutions, according to the nature, size, and needs of the locality. Similarly an attempt is being made to arrive at standards for size of personnel, expenditure on drugs, and expenditure on food. Within the given limits as much as possible is to be left to individual judgment.

THE DOCTOR'S LIFE

In England, when the evils of State medical service are discussed, it is often suggested that the State medical servant should preserve his initiative and human feelings by undertaking private practice during part of every day. Private practice is not forbidden in Russia, and a time may conceivably come when this suggestion will be adopted. At present however the main object is to provide good treatment for the nation as a whole, and personal contracts between doctor and patient are not encouraged. In Kharkov, certainly, I found private practice warmly advocated from the patient's point of view: many people, I was told, wish to consult professors who are known to have special skill but do not happen to

[5] For medical men, as for others, there is also compulsory service with the Red Army. Their military training is deferred until after qualification and is reduced, I believe, to eight months.

[6] In Soviet medical practice drugs take a relatively small place: "we are not abandoning them, but we are not going in for them." This attitude may arise partly from a scarcity of certain drugs, especially those that were formerly imported; but it is certainly associated with an increased interest in physical treatment, which is widely used.

serve in the patient's district; hence in their meagre spare time the most eminent doctors of the city undertake private work as in the old days. But in Kiev, capital of the same Republic, when I inquired if this was likely to continue, my informant said No. He is trying to make municipal clinics and hospitals so efficient that no doctor will want to work anywhere else.

As public servant, then, how does the medical profession fare? The hours of work are nominally attractive: five or six hours a day, with every fifth or sixth day free, sounds like part of a very brave new world, and is highly convenient for many doctors who have other duties, such as the care of a husband and children. Unfortunately, however, circumstances make it necessary for a large proportion of the profession to hold more than one post: a man may be a research worker in the morning, a clinician in the afternoon, and an administrator in the evening—usually because he needs three salaries, but perhaps because he wants to serve the community to the utmost, or because he is temperamentally unable to stop. I fancy that most doctors in Russia, as in England, find themselves working so long as there is any work to do, and it may take more than a revolution to make them stick to a six-hour day. But a sense of proportion might gradually develop. I asked a fanatically hard-working administrator what he would do when the supply of doctors became sufficient and he had plenty of leisure. He was characteristically polite. "Perhaps I will go fishing," he replied; "and have time to read THE LANCET."

Holidays are apt to be short just as hours are long: "until lately we had a month off in the year," one woman said, "but now it is only a fortnight." There is one direction, however, in which the Soviet Union scores a notable advance, and that is in the provision of study leave. In a country where undergraduate training has often been brief, or otherwise inadequate, a really serious attempt has been made to remedy deficiencies by post-graduate instruction.

MEDICAL REFRESHMENT

The idea of continuing education permeates the best of the hospitals and clinics: for example the Moscow General Dispensary No. 1 is loosely affiliated with a university polyclinic in such a way that they exchange doctors for two months at a time, and hold joint conferences on important subjects. But the most striking form of post-graduate training is undoubtedly the provision of busmen's holidays for practitioners. Every three years the rural doctor is supposed to have 3–4 months or more in a city, to bring his ideas up to date; and this is made easy for him by offering accommodation (if he likes) for his wife and family, and by raising his salary 75 per cent. to cover the expenses thus incurred.

Excellent on paper, I thought; but hardly feasible while doctors are so scarce. Yet here are the facts: in one year in the four principal cities of the R.S.F.S.R.—Moscow, Leningrad, Kazan, and Novo-Sibirsk—no less than 6000 persons follow these 3–4 months' courses, and the annual total for the whole Republic is 7000, or about 12 per cent. of the whole profession. In addition there are general post-graduate courses attended by doctors in their own city and lectures on special subjects open to everyone who wants to hear about new work.[1]

[1] In the Soviet Union there are no post-graduate diplomas or higher degrees, like our D.P.M., F.R.C.S., or M.S. A man's qualifications are judged on his experience, and this is recorded in the "labour book" which the doctor, like every other trade unionist, carries throughout his career. It contains a bare note of each appointment held, and also of any premiums or reprimands awarded.

FINANCIAL INTERLUDE

LECTOR: This is all very well; but you don't tell us whether doctors in Russia get a living wage. How much do they earn?

AUCTOR: They start at about 300 roubles a month and may work up to 1000, 1500, or more.

L.: How much is that in pounds?

A.: Nobody knows. If you go to the Soviet Union they will give you 25 roubles for a pound, which makes the rouble worth 10*d*. But this is merely a joke on the foreigner. Occasionally a rouble will buy goods or services worth 10*d*. in England (i.e., some things are cheap in Russia); but often it will be no more use than 2*d*. or even 1*d*. (i.e., some things are very dear). Taking prices as a whole the value of the rouble is rising (i.e., the cost of living is going down), and I heard a demi-semi-official estimate that it is now worth 6½*d*. in Moscow. Judging by what I saw in the shops, I should think the more pessimistic guess of 3*d*. is nearer the mark.

L.: But 1000 roubles a month, at 3*d*. a rouble, is only £12 10*s*.!

A.: Quite so. And at the more favourable 6*d*. a rouble it would only be £25—which does not sound much for an experienced doctor. But (even if his salary or salaries do not include his keep) the doctor in Russia is unlikely to spend much on rent or service, because he and his family are probably living in four or five rooms at most. He pays no income-tax; his children are educated gratis; like everyone else, he is free from the risk of medical or of hospital bills; his holidays may be taken on the cheap; he need not keep up appearances; he is very unlikely to have a motor-car; and there is no need to pay insurance premiums or save money for old age. The result is that though salaries seem low and prices high the shops are crammed with people. When so many essentials of life are guaranteed by the State, money does not mean quite so much; and the Russian appears a little reckless with his roubles.

L.: But I expect they still look very poor?

A.: I shouldn't have said so. The streets of the cities are apt to be dreary because the buildings are so often dilapidated, but the people in them struck me as reasonably well (and often gaily) dressed. The clothes of doctors in institutes and hospitals are not conspicuously inferior to those we see in England—apart from the style being continental rather than English! The State-owned shops, with their primitive window display and inferior salesmanship, are somewhat depressing, but evidently the last few years have brought vast improvement. My Russian hosts admitted that compared with London or Paris they are not much good. "But now it *begins*. It is only the beginning," they said. These same shops certainly find plenty of customers, and with portable gramophones at 500 roubles, and other luxuries to match, it is clear that if many people remain poor, many others are getting really big salaries.

L.: But surely the Communists' idea is that we should all share and share alike?

A.: Quite true. But the Soviet Union is at present a Socialist, not a Communist, State. My heading is Medicine under *Socialism*. I can make the difference clear in a moment.

THE POLITICAL BACKGROUND

Communism means: "From each according to his ability; to each according to his needs." In dividing the national wealth the commonplace boot-black, provided he does his best, gets as big a share as the unique bridge-designer.

The difficulties of this doctrine are illustrated by the legend of Chaliapin at the opera in the early days of the Russian Revolution. The audience waited; but the great singer could not be found. The management searched everywhere and at last discovered him selling programmes. "If I am to get the same miserable salary as a programme-seller, I prefer the easier work," he explained. But an incident like this does not (as some suppose) make nonsense of Communism; it merely shows that unless everyone

is unexpectedly good and kind, Communism will not readily work until there is plenty of wealth to go round. Supposing that Chaliapin and the programme-seller could both have all they wanted—a house, a motor-car, books, travel, holidays—then each would probably do the job for which he was fitted and each would receive whatever he needed. This is the goal towards which the Communist Party are working; and in order to reach it they are prepared to go through a transitional period of Socialism. "In the U.S.S.R.," says the new draft Constitution, "the principle of Socialism is realised: 'From each according to his ability, to each according to his work.'" In other words, while wealth is insufficient for all, Socialism gives the lion's share to people who are particularly useful to the State and cannot easily be replaced. And here the technician, including the doctor, comes into his own again.

Though superficially incompatible with Communist ideas the present Socialist régime is truly transitional, since it contains much of the substance of a Communist State. Already in England, with free libraries and free schooling (of a sort), we have gone a little way towards it; the Soviet Union, with free maintenance in sickness and old age, goes further; and it is easy enough to imagine a state of society where travel, transport, posts, lighting, fuel, and even food, would be provided by the State—"out of the rates," so to speak. In such a society, approaching the Communist ideal, money would be useful only for extras.

Meanwhile under Socialism the man with high wages, including the doctor with several jobs, is becoming quite well off, and I was told that there are (rouble) millionaires in Russia.[8] Many professional people in Moscow keep a maid ("home worker"), and those who can afford it are entitled to buy houses of their own and employ several servants for their upkeep. The changed outlook is reflected in the return of tipping in hotels and elsewhere.

"But this is dreadful," I exclaimed, when a Russian friend handed a tip to the cloakroom attendant. "When you give that man 30 kopecks he can no longer call you Tovarich (comrade). You have destroyed your Revolution. This is the end of it."

"Not at all," he replied. "Tipping is a small thing—insignificant. The great essential remains: in the Soviet Union it is impossible for any of us to live on the work of others."

THE NON-PARTY BOLSHEVIK

To my friend the Revolution meant chiefly the end of the exploitation of man by man. But it has also two other achievements which loom large in the minds of educated Russians: it has established equality of opportunity, and it has given the people a sense of participation not only in the building of a new world but also in the actual processes of government.

Having abolished capitalism and introduced State planning the Russians believe themselves immune from further trade depressions and foresee continuous progress towards a high standard of living. Already, despite colossal expenditure on the Red Army, they are surrounded by signs of the new dispensation, including such marvels as the Moscow underground railway. And the people in general are very conscious of their part in these new great things. To the "Metro" thousands and thousands of volunteers gave their leisure for months and years: when we passed a tractor works in Kharkov the young woman interpreter remarked: "I also, when I was a student, carried bricks to make that factory." Their hopefulness and confidence is like a breath of fresh air.

As to equality of opportunity, I heard almost the same tale from three different persons—two engineers and a psychiatrist. One of them was the eighth child of a poor peasant; another was the eldest of four children left fatherless when he was eighteen. All had risen to important positions, and some of their brothers and sisters had done likewise. This would have been utterly impossible, they affirmed, without the Revolution. "Instead of being a peasant," one said, "I am an engineer; and now I have a chance to think." And from two of these men came the declaration, justified or unjustified, that the government belonged to them, not they to the government. "I think this government is very beautiful," said one; "it is we, all the peoples." In actual fact the Communist Party—some 3 million men and women self-dedicated to the "vocation of leadership"—govern Russia, working through private discussion, public propaganda, and the holding of key appointments at every point of authority. But they do their work by persuasion, and evidently they act in such a way as to carry most intelligent opinion along with them on major issues. A man who was outside the Party organisation told me that the medical profession was 100 per cent. in favour of the régime; and though it is said that few doctors are active Communists a great many must be non-party Bolsheviks—to use the current witticism.

RED SHEEP AND BLACK

So much for the bright side. The dark side is the necessity for political orthodoxy. Most Englishmen detest any form of government which suppresses opposition and maintains a state of police terrorism: and Moscow seemed to me disgustingly full of police, both militiamen and representatives of the Commissariat of Internal Affairs (late Ogpu). At the same time it is pleasant to see that the new draft Constitution, for what it is worth, guarantees freedom of speech, freedom of the press, and freedom of assembly, while in future "no person may be placed under arrest except by decision of court or with the sanction of a State attorney" and "the inviolability of the homes of citizens and secrecy of correspondence are protected by law." This should mean a definite break with the old habits of the Cheka and G.P.U.

It has to be realised that the leaders of the Russian Revolution hold themselves to be fighting a war in which they still have many enemies; and though they reckon to allow prolonged discussion of policy before it is adopted, they consider that any public attempt to discredit the final majority decision is nothing less than treason—the worst offence in a nascent state. Once a policy is adopted, anyone who publicly suggests that it was a mistake is destroying confidence and possibly preventing success[9]; so he will soon find himself in Siberia or working laboriously on a canal along with assorted counter-revolutionary plotters, spies, sabotageurs, and other alleged foes of the Soviet Union.

"Yes," I said, "but what about honest differences of opinion? Your government seem to me to behave just like all the other tyrants of history. They believe themselves right, and they persecute anyone who disagrees with them."

"You've got it wrong," was the reply. "There is ample liberty for difference of opinion on most subjects; but if a person tries to overthrow the present system as a whole we can only assume that he has personal motives.

[8] A successful author, for example, may have more money than he knows what to do with.

[9] The Webbs explain this point of view most admirably. Op. cit. (ref. 3), p. 1037.

How is it possible for an honest man to suppose that Russia to-day would be the better for a change of government? Can anyone really believe that we should be happier with a return to landlords and private profit?"

Having abandoned religion, the Soviet Union pins its faith to science—Science the Salvation of Mankind.[10] "Is there another country," writes *Pravda*, "where science and scientific men enjoy such respect and support by the State? Is there another country where every student has before him the clear and certain future of work in his profession, and unlimited possibilities for the expression of his creative talents?"[2] No: there is no such country. But the spirit of science cannot truly flourish in an atmosphere of intolerance, and a time will come when Russia will have to choose between two masters. For the present we should most of us agree with F. S. Marvin that "for the task of building up a great society round one centre of government, the scientific intellect is of itself unsuited: it is a probe before it is a link."[11]

PLANNING OF RESEARCH

Medical science, like other sciences, gets strong support from the government to-day. (Has not Stalin said that "men must be grown as carefully and attentively as a gardener grows a favourite fruit tree"?) But it is natural to wonder how much it pays for this support.

I am wholly unable to say how many promising workers have been withdrawn from medical research or practice because they lacked the proper political enthusiasms: I imagine that, all told, the number must be considerable; but on the other side we must at least recognise that there is no shadow of racial persecution in the Soviet Union. What I really had in mind on going to Russia was something more subtle—namely, the damping influence of authoritative programmes. For I had read with despondency that as each year begins the staff of every institute meet to decide the plan of research to be followed during the next twelve months.

My questions about this called forth a spirited defence of planning in general. When we study the human body, they said, do we study only a finger or toe? No, we study the whole. Then if we are attempting research into the diseases of the body, why should we leave some territories completely unexplored? Nobody in Russia is forced into any kind of investigation, but if the authorities find that no one is studying an important disease—let us say rheumatism—they establish an institute and offer facilities to those who are attracted by it. It is their duty to see that the whole medical field is covered so far as possible, and also to prevent overlapping.—I was repeatedly assured that if a worker wanted to follow a new line that did not lead in the direction set by the plan he would be allowed to do so: "you have only to show that you are interested." And since the heads of many of these institutes are themselves able investigators who can see a barn-door as well as the rest of us, we must suppose that such freedom is often granted, and that the risks of planning are thereby diminished.

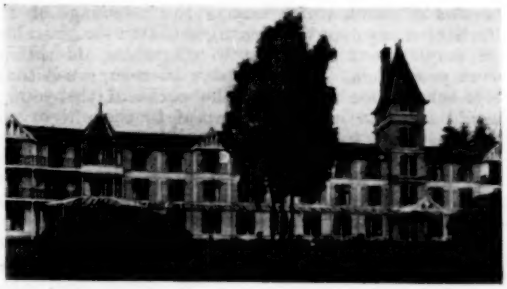
Whether this is so or not, medical investigation starts with big advantages in a country where post-mortem examination is enforceable, animal experiment unhindered, and money generously supplied. My concluding article will describe some of the steps that are being taken to fight particular diseases and solve particular problems.

[10] See the Webbs' chapter with this title. Op. cit. (ref. 3), p. 944.

[11] The Living Past. Oxford, 2nd ed., 1917.

GLEN O' DEE

THE advantages of modern treatment, hitherto enjoyed chiefly by the really rich and by patients in the voluntary hospitals, are being brought within the reach of other people by the development of pay beds and well-equipped private hospitals and clinics. For convalescence, however, the professional and middle classes still need some means of bridging the time of incomplete recovery when further skilled attention is necessary—say, for the patient who wishes to leave the nursing-home with a tube still in his wound, or for those who require massage, constant nursing, or strict diets. Usually they are obliged either to forego these "luxuries" or to engage and house a nurse, at considerable expense and with



the dislocation of domestic arrangements and family life, perhaps for long periods. The establishment called Glen o' Dee represents an attempt to fill this gap in the medical services of the country. The aim of its promoters, assisted by a board of leading members of the medical profession, is to provide a place where those with moderate means can be sent for quiet convalescence, to enjoy the best of hotel comforts, and where at the same time they can obtain massage and nursing attention under medical supervision for a small weekly charge—the maximum is a guinea—in addition to that for ordinary board (from six guineas). Modern kitchen equipment enables special diets to be served without extra charge. The purpose is simply to carry out the instructions of the patient's own doctor, and these arrangements should therefore appeal to the medical profession.

The house is situated in Deeside, one of the healthiest parts of the country. The beauties of the district and the wide field of sport available are well known. No effort has been spared to make the house ideal for those who require quiet and rest in beautiful surroundings, and launching the scheme has cost £45,000. The bedrooms, all of which face south, are fitted with every modern comfort. The grounds extend to 25 acres, and the approach to the house has been transferred to the back to avoid the noise of the motor traffic to and from the building. From the windows an extensive view across the valley of the Dee is obtained in which there is no sign of human habitation, though Banchory is only about two miles distant.

Glen o' Dee is under the management of Dr. David Lawson, who was the founder of Nordrach-on-Dee. This new venture, believed to be the first of its kind, promises to be as much appreciated by the profession as his former enterprises. Further particulars can be obtained from the manageress, Glen o' Dee, Banchory, Kincardineshire.

PARIS

(FROM OUR OWN CORRESPONDENT)

TOO OLD AT SIXTY-FIVE

THE Government has now before it the draft of a law providing, among other things, for the compulsory retirement at 65 of barristers, doctors, veterinary surgeons, dentists, pharmacists, midwives, architects, engineers, accountants, bankers, and the salaried heads of industrial concerns. It is proposed that this measure shall not come into force before Jan. 1st, 1939, in order that the beneficiaries or victims may, in coöperation with the Ministry of Labour and of National Education, devise some scheme for tempering the wind to the shorn lamb without the State having to contribute any financial aid. In defence of this measure, which enjoys the patronage of 25 Parliamentary deputies, it is urged that in the scramble for employment it is safer to disgruntle old rather than young folk. It might have been supposed that this scheme for smoothing the paths of the young would have an irresistible appeal to them if to no one else; but to judge by a forcibly worded protest recently issued by the Association of Medical Students in Paris, this body frankly condemns the proposed short cut to promotion. After all, intellectual pursuits are often handed down from father to son, and the student of 20 may depend for his bread and butter on the labours of a father of 65. As one commentator has remarked: "These young folk, who are not imbeciles, know that, in order to pursue their studies, they must receive subsidies from their families, and that this indispensable aid comes from fathers, over the age of 65, who continue to work as long as their offspring are unable to make a living of their own." It has also been pointed out that in the proposed law an invidious discrimination has been made in favour of politicians such as municipal councillors, mayors, deputies, senators, and members of the Government: if this class is not to labour under the disadvantage of an age-limit operating impartially, would it not at least be reasonable to introduce a mental test wherewith to sift the tares from the wheat? The able-bodied, able-minded doctor whose diploma was automatically cancelled on his reaching the age of 65 would perhaps find some consolation in the news that a member of the Chamber of Deputies had just been ploughed in arithmetic or scripture.

MEDICAL HANDWRITING

"Doctors in general write badly, and the results are catastrophic." So writes a correspondent in a recent number of *Concours Médical*. Instead of wasting his time and energy in lamentations over this phenomenon and the pharmacological catastrophies to which it has given rise ever since physicians started setting pharmacists the precursors of the crossword puzzle, this correspondent sets forth his ideas for a reform of doctors' handwriting. It is nothing short of a chair of medical calligraphy in the faculty of medicine. Such a chair might, he suggests, "perhaps save more patients than certain magistral chairs."

AEROMEDICAL STUDIES

About two years ago Dr. Crochet started at Rheims an "aérodrome sanitaire" and an aviation club close to the Maison-Blanche Hospital. In coöperation with two of his colleagues, he set out to create a centre of aeromedical studies, with special reference to patients and convalescents requiring a high altitude cure in pure air. On June 28th this centre was inaugurated in the presence of a representative of the Government, Colonel Mouchard of the Air Ministry. Prof. Cadenat of Paris was also present as well as other doctors who had travelled to Rheims for the occasion from many parts of France. It is to be hoped that this centre will not only enable the sick to become well in the air, but will also tell us why the well sometimes become sick in the air.

VIENNA

(FROM OUR OWN CORRESPONDENT)

ORGANISATION AND REPORT OF THE VIENNA BOARD OF HEALTH

A REPORT of the reorganised Board of Health of the Municipality of Vienna has recently been published. The Board has the following chief aims: (1) the welfare of school-children, (2) the fight against a certain group of widespread diseases (tuberculosis, alcoholism, nervous diseases, and cancer), (3) the control and prevention of infectious and epidemic diseases, (4) first-aid, (5) public health examinations, (6) medical care for the poor, and (7) an examination of all deaths. The report describes all the work done in the last 10 years in each of the above sections. Thus in section (1) we find that since 1922 there were 48 medical men entrusted with controlling the health of school-children in the public schools. In 1935 there were about 132,000 children aged between 6 and 14 in the elementary public schools, besides 8000 in kindergartens. These children doctors only control, for they are not allowed to give any treatment or advice other than to recommend the child to be seen by its regular medical adviser or to send it to a hospital, as the case may be. They may, however, vaccinate the children, if asked to do so—last year there were over 30,000 vaccinations. For dental prophylaxis and treatment, there are 16 school dental clinics, and out of the 132,000 scholars last year, 129,000 were examined and appropriate treatment given or advised. Systematic teaching in dental hygiene was given by 43 dental surgeons, 43 assistant nurses, and two matrons. Section (2) deals with the fight against tuberculosis, by means of 24 stations, which give instructions in personal hygiene and prophylaxis, and examine persons applying for help on account of suspected or manifest disease. In 1935, 59,695 persons applied and 54,647 others were visited at home. These stations can obtain radiograms from a municipal radiological department, and a laboratory for sputum and other examinations are also at their disposal; each of the stations gave last year over 6000 reports. A municipal welfare centre for alcoholics dealt with 220 cases last year, and since 1925, 2420 persons have applied for aid. An advisory centre for persons afflicted with mental or nervous troubles has existed since 1929, and has been used by 986 persons last year. A recording office for cases of malignant disease, coöperating with all the public and municipal hospitals, keeps all cases of tumour in evidence; it was founded in 1933, when it obtained records of 3500 cases. In 1935 the number rose to 5697.

The third section, dealing with infectious diseases, has a great amount of work to carry out. Not only prophylactic vaccinations against small-pox, but also

the control of the purity of the water supply of bathing waters and drains and sewerage systems come within its scope, as well as the recording and control of all reported cases of infectious disease, including the fumigation of the infected dwelling-rooms, not to omit the transport of infectious cases to hospitals. There are at present about 800 beds in readiness for outbreaks of epidemics, distributed over the chief Vienna public hospitals, and an emergency ward is kept vacant as long as possible. Segregation and quarantine were necessary in 99 instances last year; and there were 16,485 houses fumigated by formaldehyde or sulphur. The laboratory had to deal with 12,942 cases, of which only 261 were not bacteriological. It is interesting to find in section 6 that free medical advice was given to 350,000 poor persons by the officers of health in 1930, but the figure was 480,000 two years later, and it rose again to 782,000 last year. Section 7 has to examine every reported death. Since 1928, the figures vary only little, between 13,370 in 1929 and 12,337 in 1933; last year it was 12,699.

EIGHTIETH BIRTHDAY OF PROF. FINGER

Prof. Ernest Finger, a world authority on dermatology and venerology, recently received on his 80th birthday numerous congratulations from all parts of the world. A native of Prague, he studied in Vienna, held various posts in the hospitals of Prague and Vienna, was made professor in 1894, and in 1904 was appointed to the chair of dermatology in Vienna, which office he held till 1927. More than 100 papers and contributions, as well as four large handbooks, prove the great value of his work. Generations of students and physicians have learned from his books, which were translated into many languages. A splendid teacher, himself commanding the knowledge of six languages, he could give explanations to a variety of pupils in their native tongue. His clinic, therefore, was a veritable Mecca of dermatologists and venerologists, and thus his pupils may be found in nearly all the important dermatological posts of central and eastern Europe. Prof. Finger's main study was gonorrhœa, and his appointment as chief adviser and president of the Board of Health of Austria was only a slight mark of the esteem in which he was held by the highest authorities in the State.

DEATH OF JAKOB PAL

After a short illness Prof. Jakob Pal, an eminent authority on internal diseases, has just died, at the age of 74. He showed his brilliance soon after taking his degree, when he started scientific research in the laboratory of Prof. Stricker, the experimental pathologist, and Pal always remained faithful to experimental work in elucidating medical or physiological problems. His chief interest centred in the pathology of cardiovascular conditions, especially in the musculature of the blood-vessels, and this led to numerous contributions on the problem of angina pectoris. The discovery of papaverin as a powerful cardiac antispasmodic is due to Pal, who introduced this substance into materia medica. A large part of his life work was devoted to the study of hypertonia. His papers on vascular crises commanded much attention in numerous countries and he was one of the first European physicians to study systematically the pathology and therapy of pernicious anæmia. During a tour of the United States, he learned the lines of treatment of this disease, brought it to Vienna and studied it in his department, where it was systematically used and worked out. A native of Budapest, he was in charge of a medical ward in the Vienna General Hospital, which office he filled for 40 years. He was a renowned teacher, a splendid diagnostician and a successful therapeutist.

UNITED STATES OF AMERICA

(FROM AN OCCASIONAL CORRESPONDENT)

EXPERIMENTS IN ORGANISED MEDICAL CARE

FOR many years experiments have been undertaken on a small scale in the organisation of medical care, to promote greater economy and efficiency, and for the benefit of those who could not otherwise afford adequate service of this kind. The Julius Rosenwald Fund announces that during the last three years they have heard of several hundred such experiments. From this extensive material they have selected outstanding examples of each type of organisation that has been proposed and have just published these typical experiments in the form of a pamphlet.[1] Forty-four different experiments are briefly described and an analysis of them has been prepared showing for each the social groups involved, the method of payment, the agency in charge, and the services available. The Rosenwald Fund does not consider itself well enough informed to appraise the value or success of the plans it describes but it lays down a useful set of criteria by which all plans ought to be judged.

One of the most interesting of recent experiments is the Medical Economic Security Project of Washington, D.C. This project provides medical services for those of moderate means as well as for the destitute. It has a threefold organisation: the central admitting bureau for hospitals, the medical-dental service bureau, and the permit office of the board of public welfare. A fund of $300,000 is allocated by the community chest to nine hospitals. One-third of this sum is for out-patients, the remainder for in-patients. After their approval by the central admitting bureau patients present cards which guarantee the hospital full payment for services to be rendered. The amount which the patient himself can contribute is determined by the medical and dental service bureau, each case upon its merits. Patients who are completely indigent receive treatment in the municipal hospital. Medical and dental services in the offices of private practitioners are also obtainable through the coöperation of the medical-dental service bureau on a deferred payment basis adjusted to each particular purse. The scheme has been in operation for a year and it is apparently giving satisfaction at least to the physicians.

At the same time the American Foundation for Studies in Government is conducting an inquiry among members of the medical profession. Letters have been written to all members of the profession who have been in practice for 20 years or more inviting their confidential opinions on the problems of providing medical care to all. The replies received indicate that a great deal of thought has been given to the subject which has never yet found expression. Opinions have also been invited from a select group of younger men. It is expected that the results of these inquiries will be made public, so far as the writers have given their consent for publication, early in the autumn.

[1] New Plans of Medical Service: examples of organised local plans of providing or paying for medical services in the United States. Chicago: The Julius Rosenwald Fund. 1936. Pp. 74.

GRAINS AND SCRUPLES

Under this heading will appear week by week during the summer the unfettered thoughts of doctors in various occupations. Each contributor will be responsible for the section for a month; his name can be seen later in the half-yearly index.

FROM A LONDON SURGEON

IT is commonly said that education implies two processes, the development of the mind as an instrument, and its equipment with a store of knowledge to fit it for dealing with specific work; in other words, general education and vocational training. These two purposes are distinct, and must on the whole be served by different methods. General education requires the provision of a series of tasks of varying nature and graded difficulty, whose completion must be effected by the process of reason. Vocational training implies the assimilation of knowledge, the learning of facts established by the previous work of others, and though the student may repeat the experiments by which knowledge has been reached, he does not necessarily himself enter into the difficulties of their solution.

General education is the groundwork preparatory to special training, and the longer and the more thorough it has been, the more will it enable the mind to deal with a subsequent charge of detailed knowledge. The capacity of the mind for improvement as an instrument for dealing with fresh problems is almost unlimited; its power of retaining facts is limited, both in quantity and time, and though cramming at an early age may develop in it a slightly increased capacity for storage, it does so at the expense of the power of critical analysis and comparison. The matter of preliminary education should therefore be chosen for its suitability as a mental exercise rather than for its relation to the special knowledge that must follow later.

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The well-trained mind is to be judged, not by its knowledge or its outlook upon present problems, but by its ability to deal with new ones. It must be able to resolve each problem into its component parts; to observe and place in their correct sequence the available facts, attaching to each its relative value in certainty and importance; to draw on its store of experience for other facts bearing upon the same question; to see all in their mutual relationship; to deduce some conclusion; and, if necessary, to decide upon a course of action based upon that conclusion. In framing these decisions it must be able to make due allowance for preconceived ideas, for personal leanings governed by emotion rather than reason, and above all for its own possession or lack of apposite knowledge or experience. It must know whether its decisions are sufficiently sound to be accepted as the basis of action, whether they must await further information, and if so how that information may be obtained, or whether they must be regarded as no more than temporary conclusions, pending fresh developments.

The ill-trained mind by contrast mistakes high-sounding phrases for reasoned argument, its own instinctive desires for considered decisions, and is ready to pronounce judgment upon insufficient evidence and with insufficient knowledge.

Clear vision and independent judgment are the supreme test. A captain of industry may not be a technician at his own job or have its statistics at his finger-tips, but he has imagination and perceptivity that are denied to his own experts. He can see straight through the trappings of a problem to its essentials, through the manner, speech, and clothes of a man to his true worth. He can put his finger upon the difficulty whose solution will permit the disentanglement of others, and knows at once where and to whom he can turn for the information necessary to a final decision. He can select the right experts for advice and the right subordinates for assistance, and accepts their help and uses their services in so far as their particular knowledge justifies it. He is well educated.

* * *

The quality of a mind will depend in part on the metal of which it is made, in part on the way in which it has been used in the process of education. For education is no automatic furnisher. It can do no more than present material which the mind must then use and build up into something of its own substance. Books are not education, they merely present raw material collected from many lands and from many ages in handy form: but they can and often do serve the opposite purpose, keeping the mind mechanically employed as a clock ticks, relieved by this vicarious function from any need for conscious effort.

Some of the most interesting, and that very often means the best educated, of men, are those who can neither read nor write but have lived observing the sea, the hills, and their fellow men. Such a one has often beguiled a long railway journey for us with tales of the sky, the weather, and the crops, transforming these banalities of English small talk into an entertaining narrative by his shrewd observation and wise sayings. His attitude towards his fellows and his philosophy of life are simple, noble, and his own. He keeps us interested and leaves us humble. In another corner of the carriage, may be, is some well-dressed man who unfolds a newspaper as soon as he gets in, and plods through it column by column, page by page. Having skimmed it he looks for a minute out of the window, and turns back to read the local news and weather reports, and finally, if the journey lasts and he has no other papers, the whole of the advertisement columns. He finds in the printed page not a source of information or a mental exercise but a narcotic. He reads because he cannot think, and is afraid to face the deadly vacuum that is within him.

Books must be varied and selected if they are to help our education. We should read them, not passively, not to accept without thinking, nor yet to criticise and condemn; but to consider, accepting their message if we find it worthy of acceptance, rejecting or modifying it if we can find reason for doing so. Such books as contain a simple recital of facts are of little value except to provide material for some special purpose. A list of dates and battles, kings and queens, does not train our mind, but rather burdens it; but history as a living story tells of man modified by circumstance, and teaches us the workings of our own destiny in the person of others. It shows the opening scenes of the play in which we are actors, and spurs us to consider how our parts should be played. Geography as a table of rivers, mountains, and capitals is not much better than the football edition of an evening paper; but a study of the winds and the way they modify the

path of ships and the climate of continents, and of the forces that have thrown up mountains and hewn out valleys, is a lesson in the analysis of causes and in the deduction of principles from scattered observations. The classics form the surest foundation for the training of a mind, for they show us mankind in his youth, and take us back to the roots of the language we speak and of the ideas which govern our action to-day.

Did we live in Eden before the Fall, in some lotus land, or even in a favoured community like that of Athens or Elizabeth's England, we might be happy all our lives in intellectual contemplation. But men must work and women must weep, and both must train themselves to play some special part in their country's commonwealth. In so far as they have made their minds precise instruments of reason, in so far will they be fitted for responsibility and able to do well the varied, difficult, and delightful tasks which lie before them.

* * *

Medical education reflects the broad subdivisions of education in general; first, the general schooling in reasoning and mental discipline, and in the broad principles of pathology and clinical methods, later the training for some particular branch. The student is guided by chance, by opportunity, or by aptitude in his choice of a career. He may be led to adopt surgery by some of the inducements which have already been discussed, and he will plan the course of his later work accordingly; but he will rarely continue throughout his life to practise surgery in its widest sense. He may wish to do so, but he will discover that special skill in dealing with cases of a certain type leads to more and more such cases being sent to him, to the ultimate exclusion of work of other kinds. More often he will find that post-graduate experience, the holding of particular views, dexterity in the use of a new instrument or method, or association with a district or a hospital where some disease or the affections of some organ or system predominate, will determine his choice. Specialisation is the outcome of his talents; it is inevitable and advantageous. He gets a selected clinical experience that allows him to see rarities often enough to be familiar with them, and perhaps to recognise in them some common factor that leads him to the discovery of a new aspect of disease; he acquires technical skill in operations of a particular type and in handling special instruments that would be impossible if he only performed or used them occasionally; he can confine his reading to his own branch, and can cover it more thoroughly than if he was obliged to keep abreast with the whole field of surgical work. If he has undergone a wide training in general surgery, and is familiar with the work of specialists in its main subdivisions, he will often be able to apply the lessons he has learned in other branches to improvement in his own.

Specialism is thus the inevitable outcome of the complexity of medicine, and as this complexity increases, so new specialisms arise. Each is the expression of some particular need, the existence of a field of work which has hitherto been performed indifferently, or the discovery of new methods, instruments, or theories of disease which call for concentrated study before their uses or their implications can be properly understood. Each is launched by the initiative and energy of some pioneer or group of pioneers. They live and grow, or disappear, according as the need for them is real and the men practising them enthusiasts.

Among such specialisms some, determined by the bounds of one system, disease, sex, or age-period, become established by custom as permanent units in the army of surgery rather than as flying columns sent out for scouting or attack, to return when their work is done. These retain the advantages possessed by all of concentrated experience, but they have particular dangers, especially in the type of man they attract, and the amount of general surgical education which they demand as a preliminary. The founding of a specialty is the outcome of initiative, vision, courage; the decision to enter one already established and delimited is usually the product of the reverse qualities. The fighter in his youth sees the whole world before him, and wishes to savour its delights and face its dangers; he is working, exploring, inquiring, till almost imperceptibly he finds which of its many opportunities give him the best scope for his talents. The timid and unambitious student fears the magnitude of the task and the jostling of his fellows, and seeks some sheltered corner, well screened from the rude world by the ramparts erected by his predecessors. The more definite the limits of the specialism, the earlier the age at which it must be entered, the more likely will it be to attract men of this class, men who will undoubtedly do conscientious work, but who tend to uniformity rather than enterprise, to contribute modifications of existing methods rather than advances in principle.

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With no wish to decry one of the most important and necessary branches of surgery, but rather because it lends itself more easily to analysis, I would take my examples from the surgery of the ear, nose, and throat, a specialism that is as sharply demarcated as any other, but that has not yet erected that last tariff barrier of surgical nationalism, the special degree. Oto-rhino-laryngology is of the utmost importance to mankind. It deals with organs necessary not merely to life but to its sentient and sapient enjoyment. It calls for wise decisions, for bold and skilful operating. But because it asks its initiates to immolate themselves at an early age on the altar of clinical assistantships and special resident posts, it is almost closed as a career to the surgeon already experienced. It recruits its house surgeons and registrars largely from those who have left the main body of surgery soon after qualification. The tendency for such men, trained and certified, is to limit themselves more and more, and to choose simpler and simpler tasks. The oto-rhinologists are already divided by the invisible barrier of Reid's base line from the pharyngo-laryngologists, and these are prone to confine themselves to tonsillectomy and to avoid the major operations which lie within their province, such as those for carcinoma of the pharynx, œsophagus, or larynx.

The removal of tonsils is often necessary and should always be done well; but to what extent does early specialisation favour such a consummation? Practice is necessary, but how extensive and how circumscribed must it be? Does the man who removes twenty a day remove them better than he who removes twenty a week, and he in turn excel the twenty a month man? In this matter it appears that the followers of George Waugh at Great Ormond-street, surgeons practised in the use of their hands for varied tasks, can do as well as those who pursue Horner's operation with single-minded attention. These criticisms are not made in any carping spirit, but in the belief that this great branch of surgery is

worthy of more important work than it is doing now, and in the hope that, by a closer coöperation with the parent tree of surgery, it will attract men of greater experience and wider ambitions, men to whom throat surgery is "everything between the eyes and the collar-bones."

* * *

The greatest living founder of a specialism, Harvey Cushing, has written in imagery that is more vivid to his countrymen than ours, likening the growth of medicine to that of a banian tree:

"In the beginning there was a single stem. This, in the remote past, each professional aspirant learned to climb, and in his lifetime could encompass without difficulty all the knowledge its various branches represented. But from the main branches which the original tree put out, particularly from physic and surgery representing the application of medical knowledge to practice, there soon dangled many roots. Some of these finally reaching the ground became attached, and drawing up their own nourishment have in some cases enlarged and become permanent and necessary supports to the parent branches.

"Modern aspirants sometimes climb these outlying props, mistaking them for the main stem or believing that they have found a short and less crowded way to the top where others they wish to emulate are seen to perch. The temptation is great and to some irresistible, but short cuts to specialisation without thorough preparation in the fundamentals make incompetent if not dangerous practitioners, and so long as this is permitted within the profession itself we should be less intolerant of those who have smuggled themselves into the tree with no medical preparation whatsoever—the osteopath perched insecurely on a limb propped by massage, and the Christian Scientist tip-toe on another feebly supported by psychotherapy. . . . There is only one way to get a secure seat on any outlying branch and that is by approaching it from the main stem, no matter how wearisome, laborious and time-consuming this process may be."

We can make the tree of surgery into the healthy giant we would all wish it to be, not by any reactionary lopping of its branches, but by pruning the sickly and attenuated ones, so that those which grow in their place are sturdy limbs broadly based on the parent trunk, and receiving the common sap as it rises from the roots of knowledge. We do not want uniformity, the unthinking concordance of the fascist or communist state, but the coöperation of a free commonwealth.

* * *

Let us seek this coöperation in our teaching, in our examinations, and in our appointments. It is very doubtful if the special hospitals are advancing their subjects in proportion to the extent that they are standardising them for purposes of mass production. They appear to be training a race of gynæcologists who look upon natural delivery as an anachronism, of urologists in whom the word "prostate" evokes the automatic response "Harris," of orthopædic surgeons who know no treatment for fractures of the neck of the femur but the Smith-Petersen pin. Such gatherings of minds with but a single thought are comfortable, but an occasional dissenter is of value, if only to confirm the faithful in their orthodoxy. A more nourishing soil for the healthy growth of regional surgery is in the special departments of a general hospital, and the special hospitals would gain in breadth of contact and lose none of their individuality by federation with a larger unit.

* * *

Examinations provide even greater opportunities for coöperation. It is not enough that questions on "special subjects" should crop up from time to time in surgical papers; specialists themselves from every branch should be on the examining board of all licensing bodies. It is neither necessary nor practicable that each should examine every candidate. If they review all papers and set questions in some, and if they take a part in the viva-voce examinations, their subjects will be properly taught, and, what is not always the same thing, assiduously learned.

With such machinery to ensure adequate teaching, let us hope that the coining of comic degrees, which claim to be distinctions but are rather shelters for the undistinguished, will cease. The alleged aim of such a degree is to ensure special training. Where the specialty is so divorced from regular experience in its subject matter, as are public health and tropical medicine, or in its technique as is ophthalmology, some such guarantee of adequate experience is necessary. But in most of the subdivisions of surgery the processes of disease are those of general pathology, the examining and handling of patients differ little from the clinical methods of other branches, and the operative technique is that of any careful surgeon with modifications which are obvious, incidental, and not necessarily permanent. These special examinations and degrees ask men to decide upon their line of work before they know whether they are inevitably suited to it. The great specialist is also a great surgeon, and has become such because his work is a development of his special abilities. Bonney has become a vice-president of the College and Elmslie a member of its council because their fellows recognise them as leaders, not of gynæcology and orthopædics, but of surgery.

* * *

The specialist staff appointment, no less than the general, should be open to the best man who applies for it, and not alone to the man with a particular apprenticeship. If he is already a good surgeon he can be trusted to become a good specialist. And in like measure appointments to the general staff should be open to those men who, having undertaken a specialty, have found their work tending to expand and overlap its strict confines. For the essential community between all diseases and all systems is constantly tending to produce fusion, as the growth of knowledge produces disjunction. Gynæcologists gravitate to the surgery of the abdomen and breast, orthopædic surgeons to chordotomy and abdominal operations on the lumbar sympathetic chain.

The living specialty need no more fear invasion than the living nation fears the entry of immigrants or ideas. It stands not so much for a special branch of work as for a special outlook. Each has something to learn and something to teach. Each can receive and incorporate in its own progress the advances made by other branches, and can only do so by the influx of men who have kept their general outlook long enough to learn these lessons, and developed their critical faculties sufficiently to be able to apply them to new problems. Each can in turn give back to surgery the particular truths it has learned by intensive application: orthopædics, the importance of constant reference to function and of a high standard of aseptic technique; neural surgery, the value of intensive clinical study and pathological research and the lesson that tissues divided and repaired with sufficient care will present at a subsequent operation the appearance and the facility of those untouched before; plastic surgery, the need for considering the epithelial coverings in the planning of any surgical approach or operation for resection.

Medicine has developed from simple beginnings to its present complexity, as society itself has developed from the family group entirely administered by one patriarch, to the present bureaucracy, with separate ministers controlling departments which perpetually divide into new subsections. Specialism is inevitable, and its dangers must therefore be examined.

These dangers are that whereas a specialist alone can hope to be entirely efficient, he is also efficient in the narrowest sense only, and for a special purpose. Patients come to us complaining not of diseases, nor of derangements of particular organs, but of symptoms, and these symptoms are by no means always a clear indication of the disease causing them or of the organ or system in which they arise. The earlier and more vague the symptoms—and such cases become commoner with the advance of medical science and the appreciation of its services by the public—the more difficult is the elucidation of their cause; the commoner is the case that demands in the first place a general investigation.

We see then that just as in governments a minister is necessary to reconcile the conflicts of departments and to blend the advice of his experts into a policy for the welfare of the State, so in medicine there is a need for general physicians and surgeons whose business is to keep abreast with the progress of special departments and to know where and how the best results are being obtained; to watch the line of advance on its whole broad front; to gather and sort evidence from various sources, and to coördinate it to the solution of a special problem. The more whole-hearted the coöperation between departments, the freer the interchange, not merely of ideas but of personnel between the specialist wards and the general ones, the stronger will both be for the good of humanity.

PANEL AND CONTRACT PRACTICE

Health Insurance in British Columbia

JUST a year ago we summarised a draft health insurance Bill prepared by the British Columbia Government and widely circulated as a basis for discussion. Several thousand copies of the draft were distributed, and a committee, which included the secretary of the economics committee of the Canadian Medical Association, was appointed to hold public meetings for the discussion of the Bill at centres throughout the Province, and to propose such amendments as were considered likely to commend it to the electorate. As a result of these discussions and subsequent debates in the legislature, the Bill underwent great changes before it became an Act on April 1st, 1936; the cash benefits were omitted, together with the provision proposed to be made for the treatment of the indigent; and under pressure from the medical profession the annual income limit for insured persons was reduced from $2400 (£480) to $1800 (£360). Other changes were made but these were the most important.

The Act is specially noteworthy, since it is the first compulsory health insurance measure enacted in a British Dominion. Insurance is obligatory on all "employees" whose annual rate of remuneration does not exceed $1800, an employee being defined as a person receiving or entitled to receive "any remuneration for labour or services performed for another." Compulsory insurance, however, does not apply to agricultural employees or to any person who can satisfy the Health Insurance Commission, the body constituted to administer the Act, that he is "an adherent or member in good standing of the Christian Science Church"; and the Commission may exempt other specified classes of employees including domestic servants employed in private households. The employee's insurance contribution is at the rate of 2 per cent. of his remuneration, but must not be less than 35, or more than 70 cents a week. The employer's contribution is at the rate of 1 per cent. of the employee's remuneration, but must not be less than 20, or more than 35 cents a week. Voluntary contributors will pay at rates to be determined by the Commission. The benefits specified in the Act are provided not only for the insured employees and voluntary contributors but also for their dependants including children up to the age of 18. The benefits are: (1) medical services "when required for preventive, diagnostic, or therapeutic treatment and care, including prenatal and maternity treatment for women and surgical and specialist services"; (2) hospital maintenance and care for not more than ten consecutive weeks in any one illness; (3) laboratory services; (4) medicines and dressings; (5) such additional medical services as it may be practicable to provide. Insured persons may be required to bear part (not more than half) of the cost of medicines and dressings supplied to them. They have free choice of doctor and pharmacist. The doctors may be paid by salary or on the capitation or attendance systems. Where either of these two systems is in operation the sum allocated for medical remuneration is at the annual rate of $4·50 per person eligible to receive benefits, but this provision applies only until March 31st, 1938. Though there are no cash benefits the Commission is charged with the duty of investigating the question of making such provision and reporting thereon to the Lieutenant-Governor. The Commission, which is given wide powers by the Act, consists of five members of whom three have already been appointed, including the vice-chairman, Dr. Barrett, of Victoria. The Commission's chief executive officer, the director of medical services, who has not yet been appointed, must be a medical practitioner, and there is to be a technical advisory council composed of six members of whom at least one must be a woman, one the provincial health officer, and one a doctor experienced in private practice.

It was hoped that the discussions before the introduction of the Bill into the legislature would result in a scheme embodying general agreement. This, however, has not been the case. On the contrary, the opposition strengthened as the Bill proceeded through its various stages. It came chiefly from business and financial interests and from a considerable number of doctors, who opposed the Bill mainly because it made no provision for the care of the indigent and because it seemed to give no assurance that the sum specified for medical remuneration would continue to be paid. The Act has not yet been brought into operation, and it appears that its administration will be attended with considerable difficulty. The further progress of health insurance in British Columbia will doubtless have a widespread influence elsewhere, and will be watched with special interest in those Dominions in which the introduction of a health insurance scheme is becoming a practical issue. The question is being considered by a committee appointed by the South African Government,

the New Zealand Government is pledged to introduce a scheme, and at the request of the Australian Government the Minister of Health has arranged for Sir Walter Kinnear, controller of the insurance department of the Ministry, to visit Australia to advise on the question of introducing health and pensions insurance into the Commonwealth. For some time therefore British Columbia is likely to attract the attention of those who in other parts of the Empire are interested in health insurance.

CORRESPONDENCE

SPANISH MEDICAL AID COMMITTEE

To the Editor of THE LANCET

SIR,—There is no doubt that the present conflict in Spain is causing terrible suffering, not only to those who are actively engaged in the civil war, but also to the civilian population in the affected districts, and medical help is urgently needed.

At a non-party meeting held in London on Saturday last it was unanimously decided that fully equipped medical units should be sent immediately from this country to Spain, and already in response to an appeal a large number of volunteers have offered their services. We take this opportunity of appealing for doctors, medical students, and nurses to volunteer for immediate service and also to appeal more generally for donations towards the equipment of these units. Offers of personal assistance and donations should be sent direct to Spanish Medical Aid Committee, Kern House, 36, Kingsway, W.C.2.

We are, Sir, yours faithfully,

CHRISTOPHER ADDISON, CHURCHILL,
PHILIP ELLMAN, GEORGE GRAHAM,
P. D'ARCY HART, CRISTINA HASTINGS,
J. R. MARRACK, E. P. POULTON.

APPOINTMENTS IN CLINICAL SCIENCE

To the Editor of THE LANCET

SIR,—In your issue of August 1st you announce that the Medical Research Council has decided to institute six studentships (tenable for one year) and four fellowships (tenable for a maximum of two years) to encourage young British medical graduates of special ability and original mind towards becoming investigators in clinical science or experimental pathology. Will you allow someone who has recently qualified, who has already had some experience of the use of research methods, and who—like many of his friends—is anxious to become a clinical scientist, to express his doubts about the wisdom of this decision?

Sir Thomas Lewis's penultimate book was "written in the hope of encouraging some young men, whom curiosity impels, to contemplate Clinical Science as a field of interesting and useful life work." The M.R.C.'s decision goes one step further in encouraging those men not only to contemplate the field but actually to enter it. Those who feel tempted to take that step would be wise first to ponder the words recently used by Sir Farquhar Buzzard as title to an admirable address: "And the Future?"

It is both unfair and wasteful to encourage young medical graduates of special ability to enter upon a career which offers at present so few opportunities. After their year or two in these new "probationary appointments for research in clinical science," what then? It cannot be denied that there are at present too many workers of ability for the few posts which are available. A few weeks ago you announced (July 18th, p. 144) that 17 candidates applied for the new E. Alan Johnston and Lawrence research fellowship, and that of the four selected for special consideration every one would have been appointed had four fellowships been available; "the council [of the Royal Society] regard this field of applicants as a strong indication that candidates of high merit are available for full-time research posts in medicine." Those of us who wish to be clinical scientists also realise this, and are therefore discouraged from entering the field. I could quote examples of men who qualified during the last year or two after brilliant academic careers at a university (in addition, often having shown their originality of mind by published research), and who now find themselves forced to contemplate entering general practice or purely academic work—even politics (one example!)—because of the lack of opportunities in clinical science. I know that a studentship or a fellowship for a year or two is regarded by them, under the circumstances, as a waste of time. And the would-be clinical scientist, having waded for years through the useless slush of the present curriculum, does not feel inclined to waste a further year or two of the most active period of his life.

It is true that more full-time posts will almost certainly be created in the near future. It is encouraging that the young plant of clinical science, which is flourishing so well in University College Hospital, is now seeking the fertile soil of the older universities. Prof. Ryle's inaugural lecture at Cambridge and the new assistant directorship of research there, together with Sir Farquhar Buzzard's recent address (already mentioned) and the new Nuffield Institute at Oxford encourage the would-be clinical scientist to hope for opportunities in the future. But I would very humbly suggest that, until these opportunities are created, the M.R.C. could more usefully employ the annual £3000 or so which is apparently at its disposal in creating a very small number of full-time posts for the workers of high merit known to be available; and only later, when the supply of such workers is becoming insufficient owing to the creation of new posts, to transfer the money to studentships and fellowships to attract further workers of marked ability.

For reasons suggested above, I am not myself applying for one of these new appointments, but, preferring to remain pseudonymous,

I am, Sir, yours faithfully,

August 7th. "PETER SHAW."

THE SENSES

To the Editor of THE LANCET

SIR,—When writing to you the letter which appeared under the above heading in your issue of August 1st I was under the impression that I was first in the field with the suggestion that perhaps the periodic disturbance of the ether—as, for example, by light impulses—may be the explanation of our "five senses." Pursuing the inquiry for possible anticipations, I have been led to peruse Sir Isaac Newton's "Opticks" and have there found the same suggestion put tentatively forward among the queries which are appended to the third book of that masterly work. It is, of course, well known that he put forward for the consideration of other physicists certain hypotheses which he regarded as probably

true but not sufficiently proved by his own experiments; or those of others at his time, to be included in his "System of Natural Philosophy." The following extracts will illustrate how he speculated on the subject in July, 1717:—

Qu. 12.—Do not the rays of light falling upon the bottom of the eye excite vibrations in the Tunica Retina, which vibrations, being propagated along the solid fibres of the Optick Nerves into the brain, cause the sense of seeing?

Qu. 14.—May not the harmony and discord of colours arise from the proportions of the vibrations propagated through the fibres of the Optick Nerves into the brain, as the harmony and discord of sounds arise from the proportions of the vibrations of the air?

Qu. 23.—Is not vision performed chiefly by the vibrations of this medium (i.e., the ether) excited in the bottom of the eye by the rays of light, and propagated through the solid pellucid and uniform Capillamenta and of the Optick Nerves into the place of Sensation? And is not hearing performed by the vibrations of this or some other medium, excited in the auditory nerves by the tremors of the air and propagated through the solid pellucid and uniform Capillamenta of these nerves into the place of sensation? And so of the other senses?

I am, Sir, yours faithfully,

J. W. GORDON.

Broadhurst-gardens, N.W., August 8th.

MILK AND SCHOOL-CHILDREN

To the Editor of THE LANCET

SIR,—The figures to which reference is made on p. 254 of your issue of August 1st were obtained as the result of a questionnaire issued by the People's League of Health in the earlier part of this year to medical officers of health in England and Wales, and Scotland. The number of replies received was 265 and referred to a total of 2,090,663 children. Of these 1,531,705 were being supplied with pasteurised, or sterilised, or boiled milk, and 200,968 with tuberculin-tested milk or Certified milk. On the other hand 269,258 children were receiving raw milk and 88,732 Grade A (now "Accredited") milk. The results are to be considered in relation to the advice of the Board of Education, the chief medical officer of the Ministry of Health, the Cattle Diseases Committee, and the London County Council urging that only pasteurised or otherwise protected milk should be provided for the children. Unfortunately, as the above figures show, there are still areas in which this advice is not heeded.

I am, Sir, yours faithfully,

London, W., August 10th. C. O. HAWTHORNE.

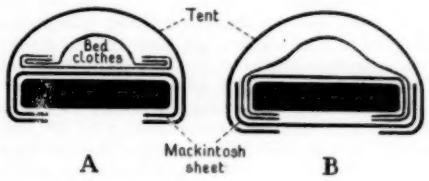
THE OXYGEN TENT

To the Editor of THE LANCET

SIR,—The thanks of your readers are due to Dr. D. C. Reavell (THE LANCET, August 1st, p. 250) for his independent testimony of the value of the oxygen tent and for pointing out that at St. Bartholomew's "patients were kept in the tent continuously for periods up to 12 days without any difficulty." As the difficulties he has encountered in the management of the tent may have been experienced by others I should be grateful if you would allow me the opportunity of replying.

Many of his criticisms have already been met in the present manufacture of the tent. Thus a stronger material is used and the manufacturers (Messrs. Siebe Gorman) supply an adequate soda-lime container; but I would say this in favour of the inexpensive tin that he has commented on, that with efficient soldering and by fixing small perforated zinc mesh (Woolworth's) as a false bottom a durable container can be produced for a few shillings in a hospital's works department out of the tin in which the soda lime is supplied, which will stand up to some months of fairly hard wear.

There are two possible ways of arranging the undersheet which are shown diagrammatically below. The advantage of the first method (A) is that the sheet can be pulled over the mattress under the patient



without having to move him. On the other hand, the bedclothes must be arranged as in the berth of a ship, and not tucked in under the mattress. In the second method (B) they can be tucked in under the mattress and the whole is enveloped in mackintosh.

It is perfectly true that the method of determining carbon dioxide is more difficult, or perhaps more tedious, than the estimation of the oxygen and steps are being taken to see if it is not possible to arrange some simpler indication that the carbon dioxide is beginning to accumulate to an undesirable extent. Where actual measurements are desired the carbon dioxide pipette should be used. I do not think the change of colour of the soda lime is a very reliable guide.

Dr. Reavell's suggestion that the base of the oxygen pipette should be made of stainless steel is an excellent one, if in renewals after breakages the junction between pipette and base is found to be liquid-tight. Perhaps a bayonet and catch junction would be an effective alternative to a screw. It would also be possible to attach a steel tube in which a screw rotated to the side tube by a rubber connexion, so as to adjust the level of the pyro. I hope he will try these possibilities. Any rubber connexion that is used, and this also applies to the rubber bulb, should be fitted to the pipette in the dry state before the pyro is introduced. The rubber-glass junction can be tightened by means of pipe cleaner wound round it; but as soon as pyro begins to ooze through the junction the whole apparatus should be disconnected and new rubber fitted. After absorbing the oxygen plenty of time—e.g., three or four minutes—should be allowed for the pyro to run down the side of the tube before taking the reading. With these precautions a single filling should last for days at a time, even if the pipette is in continuous use.

I am, Sir, yours faithfully,

E. P. POULTON.

Upper Wimpole-street, W., August 10th.

CHIPPENHAM ISOLATION HOSPITAL.—The new ward block of this hospital will be completed next month. It will have accommodation for twelve beds and will cost over £3000.

WHIPPS CROSS HOSPITAL.—This institution, which at present contains 741 beds, is to have another 500 added. The new nurses' and domestics' quarters now being erected will accommodate the extra staff required.

OBITUARY

ALEXANDRA MARY CHALMERS WATSON, C.B.E., M.D. Edin.

PRESIDENT OF THE WOMEN'S MEDICAL FEDERATION

WE regret to learn the death of Dr. Mary Chalmers Watson, well known for her organising and medical work and recently elected president of the Women's Medical Federation.

Dr. Watson was the daughter of the late Auckland Geddes, C.I.E., and sister of Sir Eric and Sir Auckland Geddes. Mona Geddes, as she was intimately called, was born in India in 1873 where her father held an important position, and was educated at St. Leonards School, St. Andrews, before proceeding to Edinburgh, where she was a student at the Medical College for Women in Edinburgh. She graduated in medicine at Edinburgh University in 1896, being the first woman medical graduate of the university and was appointed physician to the Edinburgh Hospital for Women and Children. She soon became prominent both as a physician and as a public worker, being actively interested in large matters like the management of institutional charities, the political position of women, dietetics, and questions generally of nutrition and nursing. Her all-round capacity was acknowledged by the appointments which she filled, having been at different times president of the Women's United Services Club, a manager of the Royal Infirmary, Edinburgh, a member of the Advisory Committee on Nutrition, and honorary secretary of the Queen's Institute of District Nursing, Scottish Central Council. On the outbreak of war she became first chief controller of the Women's Army Auxiliary Corps and to her duly belongs a fine share in the credit earned by the W.A.A.C. She received the order of C.B.E. in 1917. She married Dr. Douglas Chalmers Watson, late senior physician at the Royal Infirmary, Edinburgh, by whom she had two sons.

Dr. Jane Walker, C.H., founder of the Medical Women's Federation, writes: "Mrs. Chalmers Watson became well known to me in 1915, when we began the formation of the Medical Women's Federation. She was one of the original eight who started that organisation. She took an active part in its inception and for some years in its control. She was a very keen supporter of the scheme, and was largely instrumental in bringing Scotland into the Federation. She had a clear brain with a good knowledge of business. Her executive mind was of great use during our consideration of the constitution of the Federation, and the real success of that document was in a measure due to her coöperation. Prior to this she had been well known to me as one of the girls at St. Leonards School, St. Andrews, and one for whom I always felt admiration, which was borne out when I was brought into closer contact with her. She was essentially one pleasant to work with, and this too with a very positive and determined outlook. Such people are really rare and when they are gone are very much missed. I am sure this will be so in her case."

Dr. Mary Macnicol sends the following personal appreciation: "The news of the death of Mrs. Chalmers Watson has come with grievous sorrow to her multitude of friends all over the country, for we had hoped against hope that the illness which had attacked her only a few months ago had subsided, and that the improvement of which we had heard had been maintained. Here in St. Andrews, writing as I do in the garden of St. Leonards School, I can see again her tall athletic figure striding past as she led her team on to the field, to the victory they so often achieved. It was in games rather than in scholarship that Mona Geddes (as she then was) excelled at school, but was not that a foreshadowing of the future in which her greatest work was to be accomplished as the leader of a team rather than as an individual ploughing a lonely furrow?

"She began her medical career in the Medical College for Women, 30, Chambers-street, Edinburgh, in 1891. The sum total of her fellow students was 16, eight in the first year, and eight in the second: and the only qualification open to them was the Licentiateship of the Royal Colleges of Physicians and Surgeons of Edinburgh. In 1894 the university decided to allow women to graduate in medicine and to recognise for that purpose the classes held in the Medical College for Women. Mona Geddes decided at once to work for the university degree, although it entailed her beginning again the medical course, and taking once more the subjects for her first and second professional examinations. Many have heard her tell with glee the story of her first professional examination at the university, and of how she, the only woman candidate, was locked into a room by herself presumably for fear of any contamination by her presence of the unsuspecting males! These early reminiscences she would recall at gatherings of medical women and present-day students in order to present the contrast between then and now.

"Whatever Mona Chalmers Watson put her hand to she did with her whole soul; and she had moreover the great power of imbuing her fellow-workers with her own enthusiasm. Whether it were a hockey match, a Suffrage campaign, a Medical Women's Federation Council, a Women Citizen's Committee, or a Government Commission, she threw her whole personality into it, and infused others with her own courage and optimism. She was not an orator, nor even a fluent speech-maker, but no one was more sure of a hearing or could carry more weight with an audience. This was due to her faculty of clear-thinking, and to the confidence which she inspired in her hearers that she really knew and believed in the cause she was advocating. Those of us who knew and loved her best found of late years an increasing gentleness and toleration which added much to the ripe wisdom and experience which she brought to all her undertakings.

"Of her achievements in public service as chief of the Women's Army Auxiliary Corps, as leader in every movement for the advancement of women, as pioneer in the campaign for the production of a pure milk-supply, and in countless other capacities I do not speak. It is as a personal friend of a lifetime that I offer this tribute—inadequate though I feel it to be—to a loyal, generous-hearted woman, one who inspired affection in her followers as well as admiration, who was deservedly popular without ever playing for popularity, and whose whole strength and purpose was always given to great and noble causes."

LIEUT.-COL. ROBERT KNOWLES, C.I.E., I.M.S.

WE announced the death last week of Lieut.-Col. Robert Knowles, director of the Calcutta School of Tropical Medicine and Hygiene, which occurred on August 3rd in Calcutta.

The son of the Rev. J. Knowles, a prominent member of the London Missionary Society, Robert Knowles was born at Travancore, India, in 1883. He was educated at Mill Hill School, Downing College, Cambridge, and St. Mary's Hospital. He qualified with the English double diploma in 1907 and entered immediately the Indian Medical Service, in which he made a distinct mark, soon having scientific contributions to his credit and holding very responsible posts. He acted as civil surgeon at Jhansi in 1911, his first appointment, and made certain communications to THE LANCET during the period, but he shortly began to specialise and in 1912, after working in the Bombay Bacteriological Laboratory, was appointed deputy director of the Pasteur Institute, Kasauli. On the outbreak of war Knowles accompanied the Indian Expeditionary Force to Basra and served in Mesopotamia until 1916 when he returned to India, being now appointed director at Kasauli. When some four years later the Calcutta School of Tropical Medicine and Hygiene was created Knowles was appointed to the chair of protozoology, and in this capacity made practical contributions to research in many tropical diseases, notably in kala-azar, snake- and rat-bite, dysentery, and malaria, and latterly was absorbed in the work of the Malaria Transmission Enquiry. He became organising secretary of the Calcutta School and acted as director, while he was at the same time superintendent of the Carmichael Hospital for Tropical Diseases. He was last year made C.I.E. For a period he was associate editor of the *Indian Medical Gazette* and wrote with Mr. Senior-White an introduction to medical protozoology, and also on the investigation and control of malaria with special reference to Indian conditions.

Lieut.-Col. Knowles married Mary Evelyn, daughter of the late Dr. William Montgomery of Dublin, by whom he had three daughters.

JOHN SMITH PURDY, D.S.O., M.D. Aberd., D.P.H. Camb.

THE death is announced from Sydney of Dr. John Smith Purdy, well known for his official and military work as a sanitarian and the author of valuable papers on many sanitary subjects. He was born at Morpeth in 1872, the eighth son of Mr. John Purdy, and was educated at Morpeth Grammar School where he held an exhibition, whence he proceeded to St. Bartholomew's Hospital. He completed his medical career at Aberdeen, graduated as M.B., C.M. in 1898, taking the M.D. degree a few years later. He went to New Zealand to join a brother in practice at Wellington, arriving just before the outbreak of the South African war. He joined up and was appointed surgeon-captain to the 6th New Zealand Mounted Rifles and saw much military service throughout the campaign. Afterwards, for a brief period, he practised in South Africa, but returned to London for post-graduate studies. He was for two years resident at the Lock Hospital, and while there made some practical contributions to medical journals on the treatment of venereal disease, obtaining also the diploma of D.P.H. at Cambridge. Then followed a period in the Egyptian quarantine service where he worked during the years 1905–07, when he again translated his clinical experiences into special communications, published in the *Transactions* of the Australian Medical Congress of 1908 and the *Journal* of the Royal Sanitary Institute. He left the Egyptian service in 1909 and took up the position of district health officer in Auckland, and was later for three years, 1910–13, chief health officer of Tasmania; he was president of the public health section of the Australian Medical Congress in 1911. He wrote at this period a text-book on hygiene and public health with relation to conditions in Australia. At the outbreak of the European war, with the rank of colonel, R.A.M.C., Purdy served for four years with distinction. He was appointed special sanitary officer on the D.M.S. staff in Egypt in 1915, and in 1917 received the D.S.O., the honour being awarded immediately after Messines.

Colonel Purdy was interested in an important manner with many public activities. He was president of the league for the amelioration of returned soldiers in New South Wales; he had been president of the town-planning association of the colony; he was a J.P. for the city of Sydney, and an officer of the Order of St. John of Jerusalem. He married Emily, daughter of Edward Crake, in 1904, by whom he had two sons and two daughters.

JOHN HUTCHISON, L.R.C.P. & S. Edin.

NEWS has been received at Moffat, to which district he belonged, of the death of Dr. John Hutchison of Chamba on July 24th. He must have been the oldest living member of the Missionary Service. Born 88 years ago he received his medical education at the University of Edinburgh and qualified as L.R.C.P. and S. Edin. in 1870, being then only 21 years of age. He proceeded immediately to the mission field, his first appointment being at Sialkot, but shortly afterwards he moved to the native state of Chamba in the Western Himalayas, where he worked for the rest of his long life. At Chamba he rendered especially valuable service to the lepers, and a marked feature of his work was his arduous travelling year by year, whilst strength permitted, among the mountain ranges of the Himalayas, carrying his therapeutic wisdom and his Christian doctrines to far-distant dwellers. The whole country of the Punjab attracted him and his geological and archæological studies were continuously carried on; he investigated the history of the states of the Outer Himalayas and made valuable contributions to gazetteers, and was associated for a time with Sir Aurel Stein in his researches in the Punjab. Dr. Alice Hutchison, the well-known pædiatrician, is Dr. Hutchison's daughter.

Lieut.-Colonel ARTHUR BUTLER HARRIS, M.B., Ch.B. Oxon., R.A.M.C. (T.F.), retd.

Lieut.-Colonel A. Butler Harris, whose death occurred on August 4th at Loughton, was the son of the Rev. E. Harris, D.D., and was born at Edgbaston in 1865. After education at Clifton College and Leipzig he took the degrees of M.A., M.B., Ch.B. Oxon., and became interested in bacteriology and vaccine therapy. For a short time he was M.O.H. of Stoke Newington and since 1901 of Loughton U.D.C., where he resided, and was chairman of the local branch of the British Red Cross. During the war he was special sanitary officer of the Woolwich district. Colonel Butler Harris was prominent in freemasonry, being assistant provincial grand master of Essex, and he was also a deputy lieutenant of the county.

SALFORD ROYAL INFIRMARY.—The board of management of this hospital has accepted a tender for improvements to the out-patient department which needs readjustment and enlargement. Two new departments for the treatment of orthopædic and genito-urinary cases are included in the scheme.

MEDICINE AND THE LAW

Blood Test for Alcohol

THE magistrate at the Westminster police-court last week accepted medical evidence of blood tests in a case where a motorist was charged with careless driving and with driving while under the influence of alcohol. An hour after the defendant had been certified unfit to drive, a doctor arrived at the police station and blood was taken for test. The report from the police laboratory at Hendon was that the blood contained no trace of alcohol. The defendant had been under treatment for sinus trouble and urticaria, and, earlier that evening, a maximum dose of calcium had been injected in his right arm; he had also been taking an atropine preparation that might account for dilated pupils. The magistrate said he was satisfied, after hearing the medical evidence, that no jury would convict on the allegation of alcohol; he fined the defendant £5 on the charge of careless driving.

Mistaken Identification

Accounts of the recent deplorable mine disaster at Wharncliffe Woodmoor Colliery indicate that in two cases bodies were at first wrongly identified. When all allowance is made for the disfigurement due to accident and for the anxiety of friends and relatives, the fact remains as a reminder of the fallibility of human judgment in a field where important legal consequences may arise. Coroners must often meet instances of this form of mistake. Barristers and judges of experience in criminal trials will be sure to have their favourite examples. The police, who can but rely on the statements of witnesses, but who are sometimes too obstinate in their faith, must be tired of being reminded of the case of Adolf Beck. Out of 17 women who had been defrauded by a man who extracted money from them under pretence of engaging them as housekeeper, 15 identified Beck as the man. Beck's handwriting happened also to have demonstrable similarities to that of the guilty person. Sentenced to seven years' penal servitude, he was released in 1901 after serving five years of the term. In 1904 similar swindles began again; Beck was positively identified by 19 women and was again found guilty. The fortunate conviction of the real criminal on similar charges led to the discovery of the grave error of justice. Witnesses who had sworn to the identity of Beck now admitted that they were wrong. A grant of £5000 expressed the public feeling that some sort of compensation should be offered. Perhaps no trial did more to expedite the institution of a Court of Criminal Appeal in 1907. Yet the inevitable reluctance of that Court to re-hear a case, and to go behind the decision of a jury based upon the testimony of witnesses whom it has seen and heard, might well have prevented the appellate tribunal from correcting the injustice in Beck's case or in any other case where the main issue is the identification of the accused.

STANLEY SAILORS' HOSPITAL, HOLYHEAD.—Dame Margaret Lloyd George has opened a new wing at this hospital which has cost some £2000.

ROYAL SANITARY INSTITUTE.—A conference to consider the new Midwives' Act and its operation will be held by this institute in the Central Hall, Westminster, on Thursday, Oct. 22nd, at 2.30 P.M. Sir Kingsley Wood, the Minister of Health, will preside, and the discussion will be opened by Dr. J. J. Buchan, medical officer of health for Bradford.

MEDICAL NEWS

University of London

The following appointments at King's College have been announced: Dr. H. A. Dunlop, lecturer in pharmacology; Dr. N. S. Plummer, hon. lecturer and Dr. O. G. Edholm, assistant lecturer in physiology; and Dr. Edward McLellan, hon. demonstrator in anatomy.

University of Manchester

Mr. H. O. Clarke, chief assistant to the orthopædic unit of the Manchester Royal Infirmary, has been appointed lecturer in surgical pathology in the University.—Miss Henrietta Browne has given £50 in memory of her father, Dr. Henry Browne, which will be used to help to equip the surgical research laboratory.

Congresses in France

The second International Congress on Gastroenterology will be held in Paris from Sept. 13th to 15th, 1937, under the presidency of Prof. Pierre Duval. The principal subjects for discussion will be the early diagnosis of cancer of the stomach, and acute and chronic occlusion of the small intestine. The general secretary is Dr. Brohée, 64, rue de la Concorde, Brussels, and the British secretary is Dr. T. C. Hunt, 12, Queen Anne-street, London, W.1. The Paris meeting will be followed by a congress on hepatic insufficiency which is being held at Vichy from Sept. 16th to 18th, 1937. Prof. Maurice Loeper will preside and the sessions will be arranged under the headings of medicine and biology and of therapy. The general secretary is Dr. J. Aimard, 24, Boulevard des Capucines, Paris.

Congress of Mental Hygiene

The fourth European Mental Hygiene Reunion will be held at the Ministry of Health, Whitehall, London, from Oct. 5th to 8th and will be opened by the Duke of Kent. There will be three main discussions. At the first, on mental hygiene and the cinema, the speakers will be Dr. Jakob Billström, Swedish Government film censor, and Dr. A. Repond, president of the Swiss National Committee for Mental Hygiene. The second discussion, on mental hygiene and the nurse, will be opened by Dr. Hans Roemer, secretary of the German Council for Mental Hygiene, Dr. José Germain, secretary of the Spanish League for Mental Hygiene, Dr. E. Escardo, director of the Mental Hygiene Clinic, Madrid, and Dr. Heinrich Kogerer, lecturer in psychiatry and neurology at the University of Vienna. At the third session the subject will be mental hygiene and the school, and papers will be read by Dr. K. H. Bouman, president of the Dutch League for Mental Hygiene, Prof. L. Rochlin, president of the Ukrainian Psychoneurological Academy and Mental Hygiene Clinic, and Dr. J. R. Rees, medical director of the Institute of Medical Psychology, London. A reception will be given for members of the congress by H.M. Government on Oct. 6th, and visits to mental hospitals in or near London have been arranged. Further information may be had from the secretary of the National Council for Mental Hygiene, 76, Chandos House, Palmer-street, London, S.W.1.

Chartered Society of Massage and Medical Gymnastics

The annual congress of this society will be held from Sept. 21st to 25th at Bedford College for Women, Regent's Park, London, N.W., and the speakers will include Miss E. M. Widdowson (diet and physical fitness), Mr. A. Dickson Wright (royal illnesses and post-mortems), Prof. A. B. Appleton (inborn and acquired peculiarities of posture), Dr. J. B. Mennell (manipulations of the joints of the upper extremity), Dr. Emanuel Miller (psychoneuroses of childhood with special reference to postural defects), Mr. B. Whitchurch Howell (splints), Dr. Reginald Hilton (application of modern physiology to breathing exercises), Prof. Samson Wright (posture and movement), Mr. Denis Browne (club-feet in children), Dr. Reginald Miller (the treatment of some medical diseases of children), Dr. Horace Joules (aspects of heart disease), Dr. John Kalmanson (short-wave therapy), Dr. Macdonald Critchley (the romance of Huntington's chorea), Prof.

E. D. Telford (some circulatory disturbances of the extremities), Mr. Philip Wiles (some abnormalities of posture and their treatment). Mr. T. T. Stamm will show a film on the foot which has been produced by him and Mr. C. Lambrinudi, and Dr. F. G. Chandler, Dr. E. R. Boland, and Dr. J. L. Livingstone will demonstrate different methods employed in the treatment of asthma. The founders' lecture is to be given by Mr. R. C. Elmslie on the restoration of function. Cards of admission for any of the lectures may be had from the secretary of the society, Tavistock House (North), Tavistock-square, London, W.C.1.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

BRITISH POSTGRADUATE MEDICAL SCHOOL, Ducane-road, W.

MONDAY, August 17th.—2.15 P.M., Dr. Duncan White: Radiological Demonstration.

THURSDAY.—2.15 P.M., Gynæcological Endocrinology.

FRIDAY.—2.15 P.M., Department of Gynæcology: Pathological Demonstration.

Daily, 10 A.M. to 4 P.M., Medical Clinics, Surgical Clinics or Operations, Obstetrical and Gynæcological Clinics or Operations.

Vacancies

For further information refer to the advertisement columns

Aberdeen Royal Infirmary.—Asst. M.O. for Radium Dept., £150–£250. Also Hon. Clinical Tutor.
Accrington, Victoria Hospital.—H.S., £150.
Adelaide University.—Professorship of Anatomy, &c., £1200.
Albert Dock Hospital, Connaught-road, E.—Res. M.O., at rate of £110.
Barbados General Hospital.—Fourth H.S., £325.
Barrow-in-Furness County Borough.—Deputy M.O.H. and Asst. Tuber. O., £550.
Bath, Royal United Hospital.—H.P., at rate of £150.
Birmingham Children's Hospital.—First Asst. to Ear and Throat Dept., £450.
Birmingham City Mental Hospital.—Jun. Asst. M.O., £350.
Birmingham, Little Bromwich Hospital for Infectious Diseases.—Jun. Res. M.O., £300.
Bolton Royal Infirmary.—H.S., £150.
Bradford, Municipal General Hospital, St. Lukes.—H.P.'s and H.S.'s, each at rate of £150.
Burnley County Borough.—Asst. M.O., £500.
Burton-upon-Trent County Borough.—Deputy M.O.H., £600. Also Asst. M.O.H., £500.
Cambridge, Addenbrooke's Hospital.—H.S., at rate of £130.
Cardiff, Llandough Hospital, Penarth, Glam.—Jun. Res. M.O.'s, at rate of £100.
Cardiff Royal Infirmary.—H.P.'s, H.S.'s, and Cas. Surg. O., at rate of £50–£100.
Carlisle, Cumberland Infirmary.—Res. Surg. Reg., £250. H.S., at rate of £175. Also Second H.S., H.P., and H.S. to Special Depts., each at rate of £155.
Central London Ophthalmic Hospital, Judd-street, W.C.—Sen. and Jun. H.S., £120 and £100 respectively.
Coventry, Gulson-road Municipal Hospital.—Second Asst. Res. M.O., £250.
Derbyshire Royal Infirmary.—Ophth. H.S. and Emergency Anæsthetist, £150.
Dewsbury and District General Infirmary.—Second H.S., £150.
Doncaster Royal Infirmary and Dispensary.—H.S., £175.
Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S., each at rate of £110.
Dublin, Peamount Sanatorium, Newcastle.—Asst. Med. Supt., £300.
Durham County Council.—Asst. Welfare M.O. and District Tuber. M.O., each £500.
Edinburgh, Princess Margaret Rose Hospital for Crippled Children, Fairmilehead.—Asst. Surgeon and Res. Surg. O., £200 and £100 respectively.
Egyptian University, Cairo.—Prof. of Clinical Surgery and Prof. of Clinical Medicine, each £1970.
Gloucestershire Royal Infirmary.—Res. Surg. O., £200.
Gravesend and North Kent Hospital.—Sen. and Jun. H.S., each £125.
Great Yarmouth General Hospital.—H.S., £140.
Grimsby and District Hospital.—Jun. H.S., £150.
Hampshire County Council.—Asst. County M.O., £600.
Harrogate, Scotton Banks Sanatorium.—Med. Supt., £900. Sen. Asst. M.O., £450. Also Asst. M.O., £350.
Herefordshire General Hospital.—H.P. Also H.S. and Cas. O., each £100.
Hospital for Tropical Diseases, Gordon-street, W.C.—H.P., at rate of £120.
Ipswich, East Suffolk and Ipswich Hospital.—H.S., £144.
Leicester Royal Infirmary.—H.S.'s, Cas. O.'s, and H.P.'s, each at rate of £125. Also Jun. Cas. O., £100.
Manchester, Ancoats Hospital.—H.S. (Orthopædic), at rate of £100.
Manchester, Crumpsall Hospital and Institution.—Deputy Med. Supt., £600. Also Consultant Dentist, £250.
Manitoba University.—Professorship in Anatomy, $4500.
Middlesbrough, Holgate Municipal Hospital.—Jun. Res. M.O., £270.
Miller General Hospital, Greenwich-road, S.E.—Cas. O. and H.S., at rate of £150 and £100 respectively.
Newport, Mon., Royal Gwent Hospital.—Cas. O. and H.S., each at rate of £135.
Nottingham Children's Hospital.—Res. H.S., at rate of £150.
Nottingham General Hospital.—Two Res. Cas. O.'s, at rate of £150.
Plymouth, Prince of Wales's Hospital.—H.S. for Lockyer-street Hospital, at rate of £150. Also H.P. and H.S., each at rate of £120.
Prince of Wales's General Hospital, N.—Res. Jun. H.P. and Two Res. Jun. H.S.'s, each at rate of £90.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, N. Kensington.—H.S., at rate of £120–£150. Also Clin. Asst. to Out-patient Dept.
Queen Mary's Hospital for the East End, Stratford, E.—Cas. and Out-patient Officer, at rate of £150. Also Res. Anæsthetist and H.P., at rate of £120.
Reading, Royal Berkshire Hospital.—Res. M.O. to Blagrave Branch, £125.
Rochdale, Birch Hill Hospital.—Jun. Res. M.O., at rate of £225.
Rochdale Infirmary and Dispensary.—Hon. Surgeon to Ear, Nose, and Throat Dept.
Romford, Oldchurch Hospital.—Asst. Res. M.O., £350.
Rotherham Hospital.—Cas. H.S., £150.
Royal Earlswood Institution, Redhill, Surrey.—Jun. Asst. M.O., at rate of £250.
Royal Naval Medical Service.—M.O.'s.
St. Helen's County Borough.—Asst. M.O.H., £500.
Salvation Army Mothers' Hospital, Lower Clapton-road, E.—Jun. Res. M.O., at rate of £80.
Sheffield, Lodge Moor Infectious Diseases Hospital.—Jun. Asst. M.O., £200.
Southern Rhodesia Government.—Medical Inspector of Schools, £800.
South London Hospital for Women, Clapham Common, S.W.—H.P., at rate of £100.
Staffordshire General Infirmary.—H.S., at rate of £200.
Swansea County Borough.—Asst. M.O., £500.
Walsall General Hospital.—Cas. H.S., at rate of £150.
Weir Hospital, Grove-road, Balham, S.W.—Jun. Res. M.O., £150.
West Ham County Borough.—Asst. School M.O., £500.
Westminster Hospital, Broad Sanctuary, S.W.—Wander Scholarship in Diseases of Children, £250.
Weston-super-Mare Hospital.—Res. H.S., £150.
West Riding of Yorkshire County Council.—Asst. M.O. for Maternity and Child Welfare, &c., £750.
Wimbledon Hospital, Thurstan-road, S.W.—Res. M.O., at rate of £150.
Woolwich and District War Memorial Hospital, Shooter's-hill, S.E.—Res. M.O., at rate of £175. Also H.P. and H.S., each at rate of £100.

The Chief Inspector of Factories announces vacancies for Certifying Factory Surgeons at Alnwick (Northumberland), Wisbech (Isle of Ely), Saxilby (Lincolnshire), and Quorn (Leicestershire).

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED AUGUST 1ST, 1936

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 0; scarlet fever, 1597; diphtheria, 935; enteric fever, 73; pneumonia (primary or influenzal), 410; puerperal fever, 38; puerperal pyrexia, 123; cerebro-spinal fever, 20; acute poliomyelitis, 20; encephalitis lethargica, 6; dysentery, 10; ophthalmia neonatorum, 106. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on August 7th was 2987, which included: Scarlet fever, 840; diphtheria, 737; measles, 411; whooping-cough, 457; puerperal fever, 11 mothers (plus 5 babies); encephalitis lethargica, 284; poliomyelitis, 0. At St. Margaret's Hospital there were 16 babies (plus 9 mothers) with ophthalmia neonatorum.

Deaths.—In 122 great towns, including London, there was no death from small-pox, 2 (1) from enteric fever, 6 (2) from measles, 3 (1) from scarlet fever, 15 (4) from whooping-cough, 27 (6) from diphtheria, 48 (13) from diarrhœa and enteritis under two years, and 10 (1) from influenza. The figures in parentheses are those for London itself.

Hull reported 4 deaths from diphtheria, and Sheffield and Birmingham 2 each. There were 4 deaths from diarrhœa and enteritis under two years each at Liverpool and Newcastle-upon-Tyne, and 3 each at Sunderland and Birmingham.

The number of stillbirths notified during the week was 297 (corresponding to a rate of 42 per 1000 total births), including 52 in London.

NOTES, COMMENTS, AND ABSTRACTS

ATEBRIN MUSONATE ON TRIAL

AMONG the many papers on Atebrin that have appeared in the last few months, two contributions stand out for comment. Malariologists are now much concerned with the merits and demerits of this particular drug, and something like a considered opinion about it is becoming possible.

In the course of experiments at the Colombo General Hospital during the Ceylon malaria epidemic Simeons [1] elaborated a method of treating severe cases of malaria with two injections of atebrin dimethylsulphonate (musonate) given at intervals of 24 hours without using any other remedy. Apart from very serious cases in which great improvement is urgently required, this method is particularly applicable to what is known as "blanket treatment." For purposes of a test the hospital staff at Kurunegalle, the central point of the malaria epidemic, was selected. It consisted of 65 malaria-infected persons, almost all of whom had had malaria attacks within the last two months, and 38 of whom were actually suffering from clinical symptoms at the time, although they were nearly all taking quinine or quino-plasmoquine in varying doses. The spleen was enlarged in 28, and 36 films were found to contain malaria parasites. The procedure adopted was that all the 65 members of the staff were asked to take no medicine for 24 hours, after which each received an intramuscular injection of atebrin musonate 0·3 g., dissolved in 9 c.cm. of sterile distilled water. This dose was repeated next day. Subsequently blood slides were examined microscopically daily, with negative results, and, though the staff continued to work uninterruptedly, no case of fever attributable to malaria was observed in the next five weeks, despite the fact that the possibility of reinfection could not be excluded. Some six weeks later 6 cases of malaria were observed.

Mass treatment was next applied to a small isolated village with 250 inhabitants; it was in the same district and had the highest death-rate in the whole area. Blood slides to the number of 146 were examined, of which about 40 per cent. were positive. Every inhabitant received then two injections of atebrin musonate. A week later 124 blood slides were taken and only 4·5 per cent. of these were positive. This population was carefully controlled for six weeks, during which 7·6 per cent. of the treated persons complained of fever. Among these were two small children of 2 and 4 years of age, suffering from cerebral malaria: both were unconscious and having convulsions, but after injection one of them made a complete recovery.

A further opportunity for experiment arose in India in a mill area in the southern Mahratta country. The mill is situated on the bank of a river and includes a village for mill-hands, with a total population of about 5600. Blanket treatment of the whole population was begun on May 27th, 1935, and with the help of two assistants 11,300 injections were given in nine days. The dose of atebrin musonate given to children was based rather on their general appearance than on their stated age; infants below six months received 0·5 c.cm. and children under two years 1·0 c.cm. After the second injection every patient was given three tablets of 0·02 g. of plasmoquine simplex and was instructed to take one on three consecutive days. It was noted that atebrin musonate solution, kept for more than a few hours, produced giddiness and fainting. There were 49 cases in which abscesses developed, mostly in small children or emaciated adults, and probably as a result of faulty asepsis. There were also 4 cases of hæmoglobinuria after taking the atebrin and plasmoquine, and 2 of these proved fatal. All 4 patients were receiving antisyphilitic treatment, and there was nothing to suggest that their illness was caused by atebrin; Simeons is more inclined to blame the plasmoquine, or possibly its conjunction with mercury.

A clinical comparison of atebrin musonate with quinine bihydrochloride has been made by Field and Niven,[2] treating 286 cases of acute malaria at the General Hospital, Kuala Lumpur. In the atebrin series there were 117 subtertian, 40 benign tertian, and 7 quartan cases; in the quinine series there were 89 subtertian and 29 benign tertian. Quinine bihydrochloride was administered orally in solution twice daily for seven days at a dosage calculated according to body-weight. Atebrin musonate was given by intravenous or intramuscular injection: for the former 0·3 g. of the drug was dissolved in 9 c.cm. of water; for the latter the dose was 0·6–0·9 g. in 2·5 c.cm. of sterile water. In cases of *Plasmodium vivax* infection the asexual forms disappeared more rapidly under atebrin musonate than under quinine, and the duration of fever was also appreciably shorter. (The comparison is illustrated by charts.) The viability of subtertian gametocytes, however, was apparently little affected by atebrin musonate. Two patients subsequently had epileptiform fits which might be ascribed to atebrin, but there were no other important toxic effects—unless one counts the copious flow of vivid yellow tears, which showed a strong atebrin reaction. Field and Niven regard intramuscular injection as the method of choice and put the minimal effective daily dose for an adult at 0·375 g. Absorption of the drug from the muscles is very rapid and atebrin may be demonstrated in the urine within ten minutes. It was not possible to obtain precise data regarding the permanency of the cure, but analysis of cases returning to hospital within ten weeks of discharge suggested that relapses are fairly common after atebrin musonate treatment.

[1] Simeons, A. T. W.: Indian Med. Gaz., March, 1936, p. 132.

[2] Field, J. W., and Niven, J. C.: Trans. Roy. Soc. Trop. Med., April, 1936, p. 647.

DISEASE AND BEHAVIOUR

THE effect of disease or physical disability upon the behaviour and so the destinies of the great is a fascinating theme which has inspired more than one pen. Unfortunately the medical evidence available is often so scanty and unreliable as to render accurate diagnosis impossible. Mr. Kemble [3] has here chosen for his "patients" Mary Queen of Scots, Epicurus, Catherine the Great, John Milton, Beau Brummell, and Omar Khayyám—as varied an assortment as any doctor could wish for. The book is a curious medley of scientific fact interspersed with pious opinion. We are told, for example, that "not infrequently an enlarged prostate is the belated reward of virtue" and that uræmia "in the last stages occasions grave mental turpitude." Surely torpor and not turpitude would be nearer the truth. It is interesting to read why Milton's blindness was probably due to glaucoma, and that Beau Brummell died of the results of cerebral hæmorrhage. It seems that in her old age Catherine the Great had no regrets. Somewhat ingenuously, and irrelevantly, Mr. Kemble asks if this is a test of right and wrong.

[3] Hero-Dust. By James Kemble, Ch.M., F.R.C.S. London: Methuen and Co., Ltd. 1936. Pp. 193. 6s.

A TROPICAL PHARMACOPŒIA

AN interesting addition to the list of hospital pharmacopœias is one which reaches us from the School of Tropical Medicine and Carmichael Hospital for Tropical Diseases, Calcutta (Calcutta: The Art Press. 1936. Pp. 153. Rs. 2/8/–.). Drugs which are strangers to this country are included and in spite of the growth of chemotherapy certain Indian drugs of vegetable origin, notably kuth, kurchi, punarnava, and sumbul, are considered worthy of inclusion. Many of the general formulæ are similar to our own and they are mostly well-tried combinations. Liquid extract

of liquorice is not, however, a suitable flavouring agent in acid ammonium chloride mixture. The posological table is adapted from the British Pharmacopœia, 1932. Gland and tissue products are considered in a separate table but the wisdom of including gonad, mammary, and spleen extracts amongst preparations known to be active—e.g., liver and pituitary extracts—is doubtful. Amœbiasis, bacillary dysentery, and blackwater fever are dealt with in great detail and forty pages are devoted to the diagnosis and treatment of common tropical diseases. Modern chemotherapeutical drugs are introduced wherever their clinical applications have been confirmed by the numerous specialised workers on the staff. The treatment of helminthic diseases is detailed with special reference to the uses of oil of chenopodium, carbon tetrachloride, and santonin. Neostibosan and urea stibamine are favoured for the treatment of kala-azar and leishmaniasis. Injections of hydnocarpus oil and its preparations are advised for the treatment of leprosy. Interesting information for the identification of the poisonous snakes of India and details of the treatment of snake-bites are given in a separate section. Tables of food values and a useful list of proprietary and non-official drugs conclude an admirable pharmacopœia.

"A TREATISE ON MEDICINE"

AN interesting fragment of medical history is recalled in a monograph by Mr. W. L. Wardale.[1] Of Albrecht van Borgunnien, to whom "A Treatise on medicine" is attributed, nothing is known except his name, but there are grounds for believing that he was a recognised authority in the medical world four centuries ago, and that his textbook was long in vogue. The treatise consists of a prologue, an alphabetical index of drugs, with their uses, a number of recipes grouped in several books and forming a miscellaneous collection of charms and medicines, and sections dealing with urinoscopy, prognosis, and so forth. The monograph contains a complete transcript of the original manuscript and an introductory section in which the author makes a critical study of the text in an endeavour to establish its date and relation to other manuscripts. Students of the history of medicine, as well as philologists, owe gratitude to Mr. Wardale for his painstaking work.

EXPERIMENTS ON ANIMALS

IN his annual return under the Vivisection Act[2] the chief inspector points out that no cutting operation more severe than a superficial venesection has been performed without an anæsthetic. The 700,000 experiments performed without anæsthesia consisted mainly of inoculations and feeding experiments; in a very large number the results are negative and the animals suffer no inconvenience. Two hundred and eighty-seven licensees report over 141,000 experiments performed for Government departments, public health authorities, and the Medical Research Council, and no less than 333,000 experiments under the Act were performed for the preparation and testing of sera, vaccines, and drugs. The number of experiments during 1935 was 736,716, or nearly 40,000 more than in the previous year. A total of 12,058 were performed under licence alone or under Certificate C, which provides for experiments in illustration of lectures; therefore the animal was under an anæsthetic during the whole of the experiment and was killed before recovering consciousness if it was likely to suffer any pain or serious injury. During the year the inspectors made over a thousand visits, most of them without notice. As in the past, the licensees were found to be attentive to the requirements of the Act and the animals were suitably housed and well cared for. The few offenders were, also as usual, guilty of very trivial infringements, such as performing minor operations through misapprehension. The enforcement of the Act is illustrated by the fate of a pathologist at a university laboratory who performed a few simple inoculations without a licence. He explained that he had been working abroad and was not acquainted with the Act, and at once applied for a licence; but "in view of the seriousness of the offence" his application was refused.

[1] Albrecht van Borgunnien's Treatise on Medicine (Sloane MS. 3002, British Museum). By W. L. Wardale, M.A., Assistant in the Department of German, St. Andrew's University. London: Humphrey Milford, Oxford University Press. 1936. Pp. 79. 10s. 6d.

[2] H.M. Stationery Office. 1936. Pp. 55. 1s.

UNDULANT FEVER IN CORSICA

Dr. Vincent Mariotti, himself a native of Corsica, devotes an inaugural thesis to the spread of undulant fever in this island (Thèse de Paris, 1936, No. 279). It was first recognised there in 1890 after the importation of goats from abroad, and the first epidemic was in 1892. Apart from goats and sheep, pigs and cattle transmit the disease. The number of human sufferers at the present time in Corsica is estimated at 600, the northern part of the island being most affected; the incidence is highest in May and June. The principal methods Mariotti recommended for the control of undulant fever are the boiling of milk, the pasteurisation of milk used in making cheese, the adoption of hygienic precautions in handling animals, the prevention of diseased herds moving from place to place, and the inoculation (with Dubois and Sollier's vaccine) of those who come in close contact with cattle.

EVIDENCE FROM THE GRAVE

No disease is so fascinating to the medical antiquarian as syphilis. Its source, its first terrible visitation on Europe, and its effect upon history through the destruction of leaders and men of letters, are still subjects of speculation and controversy. Acquired racial immunity, and advances in diagnosis and treatment, have almost abolished its outward effects, but the more insidious depredations continue and by some are held to be increasing.

Apart from the interest of this study it is sometimes salutary for the physician and syphilologist to delve into the past—to view the disease through our forefathers' eyes and to know something of their attempts to combat it. Hence the usefulness of work like that of Dr. Einar Sjövall, who records recent findings in the exhumation of skeletal remains in an ancient cemetery in the Danish province of Jutland (Kungl. Fysiogr. Sällsk. i Lund Forhandl., 1936, vi., No. 14). The site of his investigations is an island Cistercian monastery which was founded in 1172 and demolished after the Reformation in the sixteenth century. Here there have been no burials since 1560 and the ground has remained undisturbed until the present time. The copious pathological findings among the skeletal remains suggest that the monastery undertook the care of the sick.

The present report describes the appearances of five skeletons, four of which were found in this locality. All but one showed widespread bony changes characteristic of syphilis including, in the long bones, thickening and increase of weight, coarsening and roughening of the surfaces, massive deposit of compact bone, and replacement of the contents of the medullary canals with spongy bone. In the remaining specimen the osseous changes are not characteristic. On the affected bones of the lower limbs Sjövall describes some well-marked surface grooves obliquely and longitudinally disposed and often divided into parallel smaller furrows. The smooth depressed areas are in contrast to the raised roughened areas of periosteal bone-formation which form their margins. These changes are believed to be due to the ancient practice of applying salves to syphilitic ulcers and keeping them in place by tight bands or bandages. This, it seems, was a form of treatment advocated by Paracelsus, who lived in Denmark for a time and was doctor to King Christian II. In support of his

theory the author quotes the words of Troels-Lund who, in describing health conditions in Denmark in the sixteenth century, wrote of people dying like flies in the epidemic, a circumstance which caused him no astonishment since they "washed themselves at most once a week and did not change their stockings and underwear during the whole year." The conclusion is thus reasonably drawn that a firmly applied dressing might remain in position for months. It is clear from contemporary descriptions of syphilitic ulcers, such as Fracastoro's vivid word-picture, that the bones were laid bare over a considerable area, and it is possible that the combination of localised linear pressure to the periosteum with surrounding new bone-formation might explain these mysterious furrows. The absence of such lesions in the upper limbs was due possibly to less tight bandaging or more frequent changes of dressing. The extent of the ulcerations may be gauged from the fact that some of the grooves on the bone surfaces indicate pressure in areas which are normally covered with thick layers of muscle, such as the medial aspect of the femur.

VOICE CULTURE

In so far as the written word can replace personal teaching of voice production, a little book by Mr. H. St. John Rumsey [1] will be found useful by those who want to prepare themselves for public speaking and lecturing. The author begins with a consideration of breathing, and advises that the lung capacity should be increased by raising the ribs, and that this expansion should be maintained during speech while inspiration and expiration should be achieved by the action of the diaphragm; in his view the control of the ribs by the intercostal muscles, and the consequent ability to keep the throat relaxed, is one of the most important factors in voice production. The resonators are then discussed; beauty and depth of tone depend upon thoracic resonance, which is assisted by the poise of the thorax with raised ribs, but it is not otherwise made clear how this resonance is to be obtained. In referring to nasal resonance Mr. Rumsey does not distinguish between the defects known as open and closed rhinolalia, for he says that the tone resulting from a cleft palate is almost identical with that due to nasal obstruction from a head-cold. The latter half of the book is occupied by a careful description of the vowel sounds and consonants, the former being classified as monophthongs (dreadful word!), diphthongs, and triphthongs, and by a discussion of rhythm and stress. It is doubtful whether any written description of the proper pronunciation of vowels will enable the reader to correct a faulty accent, and indeed the author agrees that voice culture needs the help of an expert, but the instruction set down in this little book will certainly be helpful to teachers and useful to those who want to recall and supplement the instruction they receive at their lessons.

MANGANESE POISONING

It is announced that manganese poisoning has been added to the list of diseases acquired in a factory or workshop that must be notified by the practitioner attending a case. This includes anthrax, and poisoning from lead, arsenic, phosphorus, and mercury. The risk of exposure occurs chiefly in the crushing, grinding, and sieving of ores containing manganese dioxide, but also to some extent in the manufacture of dry batteries and of glass, and in the smelting of iron ore. The signs and symptoms are a stolid mask-like face, a low monotonous voice, and cramp in the legs, with muscular twitching and increased tendon reflexes, ankle and patellar clonus. The patient shows retropulsion and propulsion, and has a peculiar "slapping" gait, walking on a broad base. There are also emotional disturbances and occasionally uncontrolled laughing or crying. Degenerative changes have been described in the central nervous system, but these do not shorten life, though there may be crippling effects in serious poisoning.

[1] Your Speaking Voice and its Possibilities. By H. St. John Rumsey, M.A. Cantab., Speech Therapist and Lecturer in Speech Therapy at Guy's Hospital. London: Frederick Muller Ltd. 1936. Pp. 86. 3s. 6d.

Winter in Egypt.—In answer to Dr. Oliver's query on p. 354 of our last issue, Dr. James Hasson states that the patient can obtain good care, within her means, at Villa Anna, Rue Menasce Moharem Bey, Alexandria. The house is under the supervision of Dr. H. Puy-Haubert, head of the European Hospital and the French Hospital. "But I am afraid," adds Dr. Hasson, "that Egypt is not the ideal climate for tuberculosis of the lungs, and its reputation as such is a fallacy. During my stay over there as a physician I noticed a surprising number of cases of rapid phthisis consecutive to mild forms, which even in the climate of this country would have yielded to treatment. Leysin in Switzerland or Mentone in the South of France are in my opinion more suitable places."

Sterilised Solutions for Injection.—Messrs. C. J. Hewlett and Son, Ltd. (35, Charlotte-street, London, E.C.2), have issued a description of their Ampuliques, which contain single doses of drugs in sterile solution. The containers are of alkali-free glass and in preparing the solutions great care is taken to preserve asepsis. The advantages of having an ampoule for each dose are obvious and a large selection of Hewlett's Ampuliques for urgent orders is always kept in stock. Preparations of drugs not included in the list can be supplied on request.

Appointments

Anderson, L. G., M.D. Liverp., D.P.H., has been appointed Deputy Medical Officer of Health and Assistant School Medical Officer for Torquay.

Bailey, Hamilton, F.R.C.S. Eng., Hon. Surgeon to the Italian Hospital, London.

Brock, R. C., M.S. Lond., F.R.C.S. Eng., Assistant Surgeon to the Brompton Hospital.

Copithorne, R. E. C., M.R.C.S. Eng., Resident Medical Officer at the Queen's Hospital for Children, Hackney.

Durham, J. Robertson, M.B. Edin., Resident Casualty Officer at the Royal Liverpool Children's Hospital.

Illitch, Blaguigna, M.R.C.S. Eng., Assistant School Medical Officer for Derby.

Young, J. H., M.B. Sydney, D.O.M.S., Assistant to the School Medical Department for Wolverhampton.

Births, Marriages, and Deaths

BIRTHS

Booker.—On August 5th, at Welbeck-street, the wife of Dr. F. G. Booker, of Witley, Surrey, of a daughter.

Mansell.—On August 6th, at 99, Cromwell-road, S.W., to Jean, the wife of Hal Mansell, B.M., M.R.C.P.—a son.

Shaw.—On August 4th, at Bentinck-street, the wife of Cedric Shaw, M.B., B.Chir. Camb., M.R.C.P. Lond., of a son.

MARRIAGES

Gotla—Wilson.—On July 25th, at St. Michael's Church, Aldbourne, Dr. Dudley Gotla, to Daphne, daughter of Mrs. Marsien Wilson and the late Mr. W. M. Wilson, of Aldbourne, Wiltshire.

Moorby—Thornton.—On August 1st, at St. Mary Abbots, Kensington, Surg. Lieut.-Comdr. Arthur Leslie Moorby, R.N., to Joan Eleanor Thornton.

Raeburn—Forbes.—On August 1st, at the Scottish National Church, Crown Court, London, Hugh Adair Raeburn, M.D. Edin., M.R.C.P. Edin., D.P.H., to Christina Constance, only daughter of Dr. and Mrs. Forbes, Shaftesbury-avenue, London.

DEATHS

Billups.—On August 3rd, Howard Barclay Billups, M.A., M.B., B.Ch. Oxon., of Sandown, Isle of Wight.

Butler Harris.—On August 4th, at Loughton, Essex, Lieut.-Col. Arthur Butler Harris, M.A., B.M. Oxon., T.D., D.L., Assistant Provincial Grand Master of Essex.

Crosfield.—On August 6th, at Watford, Jessie Crosfield, M.D. Brux., L.R.C.P. Edin., aged 80.

Jamieson.—On August 7th, at Windsor, John Wilson Moir Jamieson, M.B., Ch.B. St. And., of Windsor.

Malcolm.—On August 7th, at Dundee, William Stevenson Malcolm, M.D. Edin., aged 60.

Pilley.—On August 3rd, Evelyn Violet Pilley, M.R.C.S. Eng., late of the Lady Hardinge College, Delhi.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.